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SAKARYA ÜNİVERSİTESİ
FEN BİLİMLERİ ENSTİTÜSÜ**

**HELYUM BENZERİ Es, Fm, Md, No VE Lr İÇİN
SEVİYE ENERJİLERİNİN VE GEÇİŞ
PARAMETRELERİNİN HESAPLANMASI**

YÜKSEK LİSANS TEZİ

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
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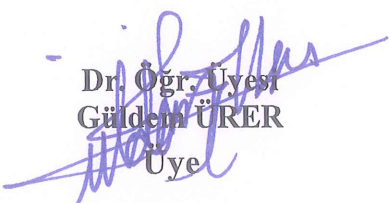
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BEYAN

Tez içindeki tüm verilerin akademik kurallar çerçevesinde tarafımdan elde edildiğini, görsel ve yazılı tüm bilgi ve sonuçların akademik ve etik kurallara uygun şekilde sunulduğunu, kullanılan verilerde herhangi bir tahrifat yapılmadığını, başkalarının eserlerinden yararlanılması durumunda bilimsel normlara uygun olarak atıfta bulunulduğunu, tezde yer alan verilerin bu üniversite veya başka bir üniversitede herhangi bir tez çalışmasında kullanılmadığını beyan ederim.

ÖNSÖZ

Bu çalışmada Breit-Pauli relativistik düzeltmelerini içeren çok konfigürasyonlu Hartree-Fock (MCHF) yöntemi kullanarak, helyum benzeri Es, Fm, Md, No ve Lr atomları için tek ve çift pariteli konfigürasyonlara ait enerji seviyeleri, elektrik dipol, elektrik quadrapol, manyetik dipol ve manyetik quadrapol geçişlerinin dalga boyları, ağırlıklı salınıcı şiddetleri hesaplanmıştır.

Yüksek lisans eğitimim boyunca bana her aşamada yardımcı olan değerli bilgilerini, tecrübesini ve zamanını esirgemeyen saygıdeğer hocam Dr. Öğr. Üyesi Güldem ÜRER'e, yoğun çalışmalarım esnasında kızımla ilgilenerek bana destek olan annem Fatma'ya ve babam Ali Osman'a bu aşamada sabır gösterdiği ve bana katlandığı için eşim Zafer'e, sürekli çalışmama izin verdiği için küçük kızım Zeynep Eylül'e ve çalışmam sırasında yardımını esirgemeyen herkese teşekkür ederim.

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KISALTMALAR LİSTESİ

MCHF : Çok konfigürasyonlu Hartree-Fock (Multiconfiguration Hartree-Fock)

NIST : National Institute of Standards and Technology

CSF : Konfigürasyon Hal fonksiyonu (Configuration State Function)

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ÖZET

Anahtar kelimeler: Enerji seviyeleri, geiş parametreleri, dalga boyları, ağırlıklı salınıcı şiddetleri, geiş olasılıkları, MCHF yöntemi

Bu alıřmada, Es^{97+} , Fm^{98+} , Md^{99+} , No^{100+} ve Lr^{101+} iyonlarının enerjileri seviyeleri ve bu seviyeler arasındaki elektrik dipol (E1), elektrik kuadrupol (E2), manyetik dipol (M1), manyetik kuadrupol (M2) geiş parametreleri (dalga boyları, ağırlıklı salınıcı şiddetleri ve geiş olasılıkları) hesaplanmıřtır. Hesaplamalar için Breit-Pauli düzeltmelerini de ieren ok konfigürasyonlu Hartree-Fock (Multiconfiguration Hartree-Fock, MCHF) yaklařıklıđını kullanan Multiconfiguration Hartree-Fock Atomic Structure Package (ok konfigürasyonlu Hartree-Fock atomik yapı paketi) kullanılmıřtır.

Bu alıřma erevesinde incelenen helyum benzeri aktinit atomlarıyla ilgili ulařılabilir kaynaklardaki alıřmalar ilk bölümde özetlenmiřtir. Yapılan kaynak taramasında bu iyonlarla ilgili yalnızca iki teorik alıřmaya ulařılabilmiřtir, deneysel alıřma mevcut deđildir. Diđer bölümlerde ise sırasıyla hesaplamada kullanılan MCHF yöntemi özetlenmiř ve elde edilen sonuçlar diđer alıřma sonuçlarıyla karşılařtırılarak yorumlanmıřtır. Son bölümde verilen seviye enerjilerinin ve geiş parametrelerinin hemen hemen hepsi ilk defa sunulmaktadır.

ATOMIC STRUCTURE AND TRANSITION PARAMETERS CALCULATIONS OF HELIUM LIKE Es, Fm, Md, No, AND Lr

SUMMARY

Keywords: Energy levels, transition parameters, wavelengths, weighted oscillator, strengths transition probabilities

In this work, energy levels and transition parameters (wavelengths, weighted oscillator and strengths transition probabilities) for electric dipole (E1), electric quadrupole (E2), magnetic dipole (M1) and magnetic quadrupole transitions (M2) for have been calculated for Es⁹⁷⁺, Fm⁹⁸⁺, Md⁹⁹⁺, No¹⁰⁰⁺ and Lr¹⁰¹⁺. The calculations have been performed by using multiconfiguration Hartee-Fock, MCHF, approximation within the Breit-Pauli framework.

It is summarized works which has been performed before about heliumlike actinides mentioned in this work in available literature, in first chapter. There is just two theoretical works and no experimental work about helium like Es, Fm, No and Lr. In the second chapter the MCHF method is briefly given. Almost all of it is new are given data for energy levels and transition parameters in the third chapter.

BÖLÜM 1. GİRİŞ

Aktinitler, elektron diziliminde 5f yörüngelerinin dolması ile oluşan atomlardır ve periyodik sistemde yedinci sırada yer alırlar. Elektron diziliminde 5f elektronu bulunmayan Aktinyum (Ac) bazı hallerde aktinit olarak ele alınırken bazı kaynaklarda alınmamıştır. Bu sebeple aktinitler bazı kaynaklara göre on dört ($Z=90-103$), bazı kaynaklara göre ise on beş ($Z=89-103$) elementten oluşmaktadır. Aktinitler radyoaktif elementlerdir. Aktinitler grubunun ilk dört üyesi (aktinyum, toryum uranyum, protaktinyum) tabiatta doğal halde bulunmaktadır. Diğerleri laboratuvar şartlarında üretilmektedir. Nükleer enerji santrallerinde, nükleer reaksiyonlara kolaylıkla girebilen bu elementler, hızlı bir şekilde enerji ortaya çıkarmaktadır. Ortaya çıkan enerji, kontrol altında tutularak elektrik enerjisine dönüştürülebilmektedir.

Uranyum ve toryum doğada bulunduğu için sanayide değerlendirilebilmektedir. Plütonyum ve sonrasındaki iyonlar nükleer tıp ve kanser tedavisinde kullanılmaktadır. Radyoaktif özellikleri nedeniyle, nükleer enerji santrallerinde elektrik enerjisi üretmede, denizaltı ve benzeri askeri araçların reaktörlerinde güç üretiminde ve termonükleer ısı üretimi ile nötron oluşturulması araştırmalarında da sıkça kullanılmaktadır.

Helyum atomu $+2e$ yüklü çekirdek etrafında dolanan iki elektrondan oluşan bir yapıdır. Helyum benzeri iyonlar ise $+Ze$ yüklü çekirdek etrafında dolanan iki elektronlu yapılardır ve hidrojen benzeri yapıdan sonra gelen en basit hallerdir. Bu çalışmada aktinitlerin son beş elemanı olan helyum benzeri aynştaynyum (Es^{97+} , $Z=99$), fermiyum (Fm^{98+} , $Z=100$), mendelevyum (Md^{99+} , $Z=101$), nobelyum (No^{100+} , $Z=102$) ve lavrensiyum (Lr^{101+} , $Z=103$) iyonlarını incelenmiştir. İnceleme Breit-Pauli relativistik düzeltmelerini içeren çok konfigürasyonlu Hartree-Fock (MCHF)

yaklaşıklığı ile gerçekleştirilmiştir. Hesaplamalarda tüm iyonlar için çift pariteli $nsns'$ ($n=1-5$, $n'=1-9$, $5s9s$ hariç), $1snd$ ($n=3-7$), $nnpn'$ ($n=2-4$, $n'=1-9$), $5p6p$, $6p^2$, $2p4f$, $1s5g$, $2s5g$ seviyeleri ve tek pariteli $nsnp'$ ($n=1-9$, $n'=2-9$, $9s9p$ hariç), $2pnd$ ($n=3-6$) $ndnp'$ ($n=3-5$, $n'=4-9$ $n'>n$), $nsn'f$ ($n=1,2$, $n'=4-9$), $2p5g$, $4p4d$, $4p5d$ seviyeleri ve bu seviyeler arasındaki elektrik dipol (E1), elektrik kuadrupol (E2), manyetik dipol (M1) ve manyetik kuadrupol (M2) geçişleri için dalga boyları, salıncı şiddetleri ve geçiş olasılıkları hesaplanmıştır.

Büyük Z 'li ağır atom ve iyonların fiziksel özellikleri hala tam olarak bilinmemektedir. Geçmişten günümüze güncelliğini koruyan ve hesaplama yöntemleri için de bir test niteliği taşıyan helyum benzeri iyonlar için yapılan çalışmalarda aktinit atomları çok az yer almıştır. Mevcut çalışmalardaki incelemeler, $n=1$ ve 2 seviyeleri ile sınırlı kalmıştır. Seviye enerjileri için yapılan çalışmalarda günümüzden geçmişe tarih sırasına göre çok konfigürasyonlu Dirac-Fock, (MCDF) (Nahar, 1988; Zhang ve arkadaşları, 2006; Natarajan, 2014), konfigürasyon etkileşimi (CI) (Drake, 1988; Nahar, 1988), iki kez Green Fonksiyonu (TTGF) (Artemyev ve arkadaşları, 1994) yöntemleri, relativistik tüm mertebelerden çok parçacık yaklaşıklığı (MBPT) (Plate ve arkadaşları, 2005) varyasyonel yöntemin Dirac denklemine bir uygulaması (Krause, 1986) ve relativistik rasgele faz yaklaşıklığı (RRPA) (Johnson ve arkadaşı, 1976) yöntemi kullanılmıştır. Enerji seviyeleri içeren deneysel çalışmalarda ise sadece U^{90+} iyonunun $1s2p \ ^1P_1$ (Briand ve arkadaşları, 1990; Lupton ve arkadaşları, 1994) seviyesi ile $1s2p \ ^3P_1$ seviyesi (Briand ve arkadaşları, 1990) yer almaktadır.

Yapılmış teorik (Johnson ve arkadaşı, 1976; Natarajan, 2014) ve deneysel (Briand ve arkadaşları, 1990; Lupton ve arkadaşı, 1994) çalışmalarda, sadece $1snl$ ($n=1, 2$ ve $l=0, 1$) seviyelerinin bilgileri bulunmaktadır. Enerji seviyeleri verilerine göre daha az sayıda olan teorik geçiş verileri çalışmalarında (Ivanov ve arkadaşları, 1975; Krause, 1986; Andreev ve arkadaşları, 2008; Natarajan, 2014) yine aynı seviyeler hakkında kısıtlı bilgi mevcuttur. Ulaşılabilir kaynaklarda geçiş verilerine ait deneysel çalışma mevcut değildir.

Çok ağır atomlar (SHE: Super Heavy Elements) sınıfına giren aktinitler ile hem teorik hem de deneysel olarak çalışmak çok zordur. Nötral hallerine göre nispeten daha basit yapıda olan helyum benzeri halleri çalışmak daha kolay olmasına rağmen mevcut çalışmalarda konuyla ilgili sadece iki çalışma mevcuttur. Bunların ilkinde $Z=2-90$ ve $Z=100$ aralığındaki iki elektronlu iyonların relativistik varyasyon yöntemi kullanılarak $1s$, $1s2s$ ve $1s2p$ hallerinin enerjileri Krause tarafından hesaplanmıştır (Krause, 1989). Bir diğer kaynakta ise Nd, Hg, Fm ve $Z=120$ iyonlarının korelasyon enerjileri hesaplanmıştır (Watanabe ve arkadaşı, 2005).

BÖLÜM 3. SONUÇLAR VE TARTIŞMA

Aktinitlerin son beş üyesinin (Es, Fm, No, Md ve Lr) helyum benzeri hallerini konu alan bu çalışmada adı geçen iyonların seviye yapıları ve bu seviyeler arasındaki izinli elektrik dipol (E1), yasaklı elektrik kuadrupol (E2), manyetik dipol (M1) ve manyetik kuadrupol (M2) geçişlerine ait atomik yapı parametreleri (enerji seviyeleri, dalga boyları, geçiş olasılıkları ve ağırlıklı osilator şiddeti) hesaplanmıştır. Çok konfigürasyonlu Hartree-Fock yaklaşıklığı kullanılarak yapılan hesaplamalarda Breit-Pauli katkıları da dikkate alınmıştır.

Hesaplamalarda, tüm iyonların (Es^{97+} , Fm^{98+} , Md^{99+} , No^{100+} ve Lr^{101+}) çift pariteli halleri için $nsns'$ ($n=1-5$, $n'=1-9$, $5s9s$ hariç), $1snd$ ($n=3-7$), $npnp'$ ($n=2-4$, $n'=1-9$), $5p6p$, $6p^2$, $2p4f$, $1s5g$, $2s5g$ konfigürasyonları ve tek pariteli halleri için $nsnp'$ ($n=1-9$, $n'=2-9$, $9s9p$ hariç), $2pnd$ ($n=3-6$) $ndnp'$ ($n=3-5$, $n'=4-9$ $n'>n$), $nsn'f$ ($n=1,2$, $n'=4-9$), $2p5g$, $4p4d$, $4p5d$ konfigürasyonları dikkate alınmıştır. Seçilen konfigürasyon takımında helyum benzeri bir yapının taban hali olan $1s^2$ özünden tekli ve çiftli uyarılmaları dikkate alınmıştır. Ulaşılabilir kaynaklarda çok az sayıda eser ve bu eserlerde çok az sayıda karşılaştırma değeri vardır. Bu yüzden mümkün olduğunca çok seviye hakkında bilgi edinebilmek adına kullanılan programın elverdiğince seviye (konfigürasyon) dikkate alınmaya çalışılmıştır.

Süper ağır atomlar (SHE: Super Heavy Atoms) sınıfına giren aktinitler büyük atom numaraları ve radyoaktiviteleri nedeniyle teorik olarak çalışılması zor yapılardır hatta deneysel olarak çalışmak neredeyse imkansızdır. Bu sebeple özellikleri bile hala tam olarak bilinmemektedir. Nötral atomlarına göre çalışılması nispeten daha kolay olan helyum benzeri iyon halleri için yapılan çalışmalar da oldukça az sayıdadır.

Ulaşılabilir kaynaklarda, bu çalışmanın konusu olan seviye yapıları ve geçiş parametreleri hakkında veri bulunan yalnızca iki teorik çalışma mevcuttur. Çalışmalardan birinde Fm^{98+} temel hal enerjisi (Hakozaki, 2005), diğerinde ise $1s2p^3P_1, ^1P_1 - 1s^2 ^1S_0$ elektrik dipol geçişine ait geçiş olasılığı verilmektedir (Krause, 1989).

3.1. Helyum Benzeri Es, Fm, Md, No ve Lr'nin Seviye Enerjileri

Es^{97+} , Fm^{98+} , Md^{99+} , No^{100+} ve Lr^{101+} iyonları için MCHF yöntemiyle yapılan hesaplamalarda ilk adım seviye yapılarının belirlenmesidir. Hesaplamalarda elde edilen çift pariteli seviyelerin enerjileri Tablo 3.1.'de, tek pariteli seviyelerin enerjileri ise Tablo 3.2.'de verilmektedir. Her iki tablodaki enerji değerleri helyum benzeri yapıların temel hali olan $1s^2 ^1S_0$ seviyesine göre cm^{-1} biriminde sunulmaktadır. Tablolardaki ilk seviyenin ait olduğu konfigürasyonu ve terimini göstermektedir. Diğer sütunlarda ise atom numarası sırasıyla helyum benzeri aynştaynyum (Es^{97+} , $Z=99$), fermiyum (Fm^{98+} , $Z=100$), mendelevyum (Md^{99+} , $Z=101$), nobelyum (No^{100+} , $Z=102$) ve lavrensiyum (Lr^{101+} , $Z=103$) seviye enerjileri yer almaktadır. Tablolar yukarıdan aşağıya doğru artan enerji değerlerine göre dizilmiştir.

Seviye yapılarının düzgün belirlenebilmesi için öncelikle temel halin iyi belirlenmesi gerekir. MCHF yöntemiyle yapılan hesaplamalarda Es^{97+} , Fm^{98+} , Md^{99+} , No^{100+} ve Lr^{101+} iyonları için temel haller ($1s^2 ^1S_0$) sırasıyla $2194755111 cm^{-1}$, $2495157186 cm^{-1}$, $2552377928 cm^{-1}$, $2610464182 cm^{-1}$, $2610464182 cm^{-1}$ ve $2669426141 cm^{-1}$ olarak elde edilmiştir. Temel haller ile ilgili tek karşılaştırma değeri Fm^{98+} 'ye ait teorik bir çalışma sonucudur, ($2581841568 cm^{-1}$ (Krause, 1989)). Temel haller ile ilgili deneysel bir çalışma ulaşılabilir kaynaklarda bulunmamaktadır. Fm^{98+} 'nin taban hali için bu çalışma sonucu elde edilen değer ile diğer çalışma sonucunu karşılaştırmak için yüzde hata hesabı $(|E_{BuÇalışma} - E_{DiğerÇalışma}| / E_{DiğerÇalışma}) \times 100$ ifadesi ile hesaplandığında %3,35 fark olduğu bulunmaktadır. Tablo 3.1'de verilen enerji değerleri için ne teorik ne de deneysel bir karşılaştırma değeri bulunmamaktadır. Ancak benzer konfigürasyon takımı ve MCHF yöntemiyle daha küçük atom numaralı helyum benzeri aktinit atomları için yapılan çalışmadaki (Arslan, 2017) yorumların bu çalışma konusu olan

iyonlar için de geçerli olduđu düşünölmektedir. Yani düşük seviyeler için oldukça iyi sonuçlar elde edildiđi, atom numarası arttıkça ve üst seviyelere gidildikçe hassasiyetin bir miktar azalacağı ancak yine de sonuçların seviye yapılarını tahmin etmek için oldukça iyi veriler olduđu düşünölmektedir.

Tablo 3.1. Helyum benzeri Aynştaynyum, Fermiyum, Mendelevyum, Nobelyum, Lavrensiyum için çift pariteli seviyelerinin enerjileri (cm⁻¹)

| | Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 1s ² | ¹ S ₀ | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| 1s2s | ³ S ₁ | 905426450,42 | 926470795,44 | 947843448,23 | 969548575,45 | 991590414,67 |
| | ¹ S ₀ | 906145643,49 | 927191167,17 | 948564813,72 | 970270750,30 | 992313215,24 |
| 1s3s | ³ S ₁ | 1081523399,89 | 1106749279,17 | 1132367669,10 | 1158383245,63 | 1184800751,21 |
| | ¹ S ₀ | 1081650055,55 | 1106875274,78 | 1132492981,18 | 1158507852,08 | 1184924631,22 |
| 1s3d | ³ D ₂ | 1100357715,42 | 1126495157,43 | 1153061392,09 | 1180062218,63 | 1207503526,73 |
| | ³ D ₁ | 1100450750,74 | 1126591351,45 | 1153160820,12 | 1180164957,11 | 1207609653,26 |
| | ³ D ₃ | 1104018647,42 | 1130313475,52 | 1157042288,24 | 1184211007,78 | 1211825648,68 |
| | ¹ D ₂ | 1104087104,59 | 1130383981,20 | 1157114886,15 | 1184285742,17 | 1211902564,42 |
| 1s4s | ³ S ₁ | 1140276299,92 | 1166827604,48 | 1193788672,52 | 1221164232,96 | 1248959079,49 |
| | ¹ S ₀ | 1140316568,64 | 1166867575,23 | 1193828347,06 | 1221203614,08 | 1248998170,97 |
| 1s4d | ³ D ₂ | 1154310053,31 | 1181618731,71 | 1209371069,80 | 1237572978,57 | 1266230461,71 |
| | ³ D ₁ | 1154344328,08 | 1181654063,30 | 1209407477,23 | 1237610480,90 | 1266269078,05 |
| | ³ D ₃ | 1155744925,84 | 1183111963,34 | 1210924376,37 | 1239188105,58 | 1267909184,31 |
| | ¹ D ₂ | 1155773975,46 | 1183141834,26 | 1210955084,28 | 1239219666,31 | 1267941613,89 |
| 1s5s | ³ S ₁ | 1166628783,64 | 1193758242,44 | 1221304407,40 | 1249272019,02 | 1277665882,03 |
| | ¹ S ₀ | 1166647723,83 | 1193777271,10 | 1221323552,10 | 1249291309,73 | 1277685351,43 |
| 1s5g | ³ G ₄ | 1173134159,15 | 1200595400,97 | 1228487613,77 | 1256816030,76 | 1285585961,57 |
| | ³ G ₃ | 1173139276,65 | 1200600675,06 | 1228493047,59 | 1256821627,52 | 1285591724,52 |
| | ³ G ₅ | 1173356831,71 | 1200827226,99 | 1228728872,56 | 1257067007,31 | 1285846946,58 |
| | ¹ G ₄ | 1173360908,43 | 1200831428,55 | 1228733201,51 | 1257071466,19 | 1285851537,93 |
| 1s5d | ³ D ₂ | 1179267554,50 | 1207115994,15 | 1235414769,90 | 1264169831,48 | 1292931917,38 |

Tablo 3.1. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|-----------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 1s5d | ³ D ₁ | 1179282947,84 | 1207131814,04 | 1235431021,28 | 1264186516,47 | 1292943021,45 |
| | ³ D ₃ | 1179939439,33 | 1207813471,50 | 1235945854,43 | 1264223976,66 | 1293387221,82 |
| | ¹ D ₂ | 1179953723,93 | 1207828130,79 | 1235956809,00 | 1264235006,84 | 1293404335,54 |
| 1s6s | ³ S ₁ | 1180659853,16 | 1208092730,44 | 1236138494,93 | 1264920466,27 | 1294165435,13 |
| | ¹ S ₀ | 1180670673,71 | 1208103614,34 | 1236153534,89 | 1264935892,92 | 1294181254,50 |
| 1s7s | ³ S ₁ | 1188981814,16 | 1216591243,85 | 1244622775,53 | 1273081149,80 | 1301971171,18 |
| | ¹ S ₀ | 1188990251,44 | 1216599989,44 | 1244631860,42 | 1273090607,08 | 1301981036,17 |
| 1s6d | ³ D ₂ | 1192760334,15 | 1220898529,70 | 1249490528,26 | 1278542294,34 | 1307789660,66 |
| | ³ D ₁ | 1192768151,03 | 1220906538,78 | 1249498730,96 | 1278550691,98 | 1307796228,73 |
| | ³ D ₃ | 1193113486,58 | 1221264152,11 | 1249868891,40 | 1278782134,55 | 1308059885,65 |
| | ¹ D ₂ | 1193121293,24 | 1221272145,08 | 1249877072,99 | 1278788453,66 | 1308068479,09 |
| 1s8s | ³ S ₁ | 1194337895,32 | 1222061027,63 | 1250207526,20 | 1278933669,88 | 1308464546,15 |
| | ¹ S ₀ | 1194343553,73 | 1222066891,84 | 1250213610,57 | 1278942042,39 | 1308473111,82 |
| 1s9s | ¹ S ₀ | 1197989898,87 | 1225790340,04 | 1254014995,84 | 1282668609,90 | 1311755989,86 |
| | ³ S ₁ | 1197991123,61 | 1225791929,00 | 1254016981,72 | 1282671028,01 | 1311758878,28 |
| 1s7d | ³ D ₂ | 1200858287,59 | 1229169496,56 | 1257936533,42 | 1287165369,16 | 1316862068,05 |
| | ³ D ₁ | 1200862485,47 | 1229173780,54 | 1257940903,56 | 1287169825,60 | 1316866610,81 |
| | ³ D ₃ | 1201055586,88 | 1229373002,54 | 1258146350,68 | 1287381601,81 | 1317084819,48 |
| | ¹ D ₂ | 1201060144,00 | 1229377652,38 | 1258151093,93 | 1287386439,15 | 1317089751,57 |
| 2p ² | ³ P ₀ | 1805528013,50 | 1846706030,18 | 1888485947,34 | 1930873869,71 | 1973875983,85 |
| 2s ² | ¹ S ₀ | 1821709389,79 | 1863951601,94 | 1906851827,90 | 1950418407,66 | 1994659823,45 |
| 2p ² | ³ P ₁ | 1845649225,59 | 1888585641,67 | 1932183247,07 | 1976449548,27 | 2021392152,42 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p ² | ¹ D ₂ | 1845828836,73 | 1888764089,81 | 1932360422,37 | 1976625339,19 | 2021566445,66 |
| | ³ P ₂ | 1886192973,48 | 1930891773,58 | 1976310904,66 | 2022459277,31 | 2069345921,50 |
| | ¹ S ₀ | 1886993640,99 | 1931703943,61 | 1977134712,55 | 2023294859,94 | 2070193417,24 |
| 2p3p | ³ D ₁ | 1988163078,37 | 2033957452,22 | 2080442022,19 | 2127624431,31 | 2175512430,41 |
| | ³ P ₀ | 1988438388,12 | 2034232956,07 | 2080717655,38 | 2127900134,05 | 2175788147,98 |
| | ³ P ₁ | 1997175709,66 | 2043304822,40 | 2090129488,36 | 2137658117,78 | 2185898909,07 |
| 2p3p | ³ D ₂ | 1997216988,06 | 2043338140,39 | 2090156874,25 | 2137680856,05 | 2185917856,19 |
| 2s3s | ³ S ₁ | 1998411253,04 | 2044836786,45 | 2091986547,65 | 2139868644,26 | 2188491637,01 |
| | ¹ S ₀ | 1998582546,85 | 2045015179,31 | 2092169974,91 | 2140055785,30 | 2188681599,43 |
| 2p3p | ³ D ₂ | 2028902850,68 | 2076463993,87 | 2124774539,94 | 2173843536,89 | 2223680159,19 |
| | ³ P ₁ | 2028904283,29 | 2076466227,56 | 2124777598,65 | 2173847444,84 | 2223684940,87 |
| | ³ D ₃ | 2037664494,14 | 2085551661,89 | 2134195671,22 | 2183605592,98 | 2233790620,57 |
| | ¹ P ₁ | 2037673032,60 | 2085560380,80 | 2134204575,61 | 2183614687,58 | 2233799909,89 |
| | ³ P ₂ | 2037951018,78 | 2085840153,11 | 2134486093,30 | 2183897909,12 | 2234084792,92 |
| | ¹ S ₀ | 2038260350,51 | 2086153341,63 | 2134803152,02 | 2184218847,52 | 2234409614,20 |
| | ³ D ₁ | 2048211110,21 | 2095399282,24 | 2143297778,13 | 2191914366,61 | 2241256922,51 |
| 2p4p | ³ P ₀ | 2048287029,80 | 2095475909,90 | 2143375204,36 | 2191992694,20 | 2241336269,26 |
| | ³ P ₁ | 2051271635,49 | 2098557917,98 | 2146556116,46 | 2195273982,41 | 2244719372,57 |
| | ³ D ₂ | 2051273179,46 | 2098559137,47 | 2146557013,17 | 2195274557,94 | 2244719628,55 |
| | ³ S ₁ | 2057302143,20 | 2105060755,33 | 2153558775,34 | 2202805107,58 | 2252808792,06 |
| 2s4s | ¹ S ₀ | 2057353471,09 | 2105112047,36 | 2153610030,45 | 2202856325,89 | 2252859974,88 |
| | ³ G ₃ | 58897986,09 | 2106602511,04 | 2155037616,81 | 2204211668,93 | 2254133149,75 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p4f | ³ F ₂ | 2058909829,09 | 2106614387,36 | 2155049524,01 | 2204223604,51 | 2254145111,25 |
| | ³ D ₃ | 2059625279,82 | 2107359497,46 | 2155825201,53 | 2205030775,84 | 2254984721,20 |
| | ³ G ₄ | 2059634126,64 | 2107368538,49 | 2155834439,76 | 2205040214,25 | 2254994362,85 |
| 2p5p | ³ D ₁ | 2074955278,24 | 2122742508,59 | 2171247895,83 | 2220479246,18 | 2270444471,97 |
| | ³ P ₀ | 2075051885,60 | 2122844421,24 | 2171355447,16 | 2220592784,94 | 270564362,65 |
| | ³ P ₁ | 2076283420,75 | 2124108932,03 | 2172652949,30 | 2221923322,13 | 2271927945,70 |
| | ³ D ₂ | 2076283480,67 | 2124108994,66 | 2172653135,70 | 2221923633,52 | 2271928383,25 |
| 2s5s | ³ S ₁ | 2083693549,05 | 2132030328,24 | 2181113434,18 | 2230951784,13 | 2281554430,09 |
| | ¹ S ₀ | 2083715162,51 | 2132052117,52 | 2181135419,59 | 2230973987,01 | 2281576873,07 |
| 2p4p | ³ D ₂ | 2088878060,26 | 2137180030,49 | 2185995172,56 | 2235539700,48 | 2285821533,03 |
| | ³ P ₁ | 2088879865,20 | 2137234750,72 | 2186053123,75 | 2235601146,02 | 2285886706,17 |
| 2p6p | ³ D ₁ | 2089086489,89 | 2137832918,71 | 2186732402,25 | 2236478226,43 | 2286602488,33 |
| | ³ P ₀ | 2089138367,77 | 2137835279,75 | 2186734815,18 | 2236521556,86 | 2286603500,57 |
| | ³ P ₁ | 2089779001,60 | 2137892976,18 | 2187552162,54 | 2237832260,70 | 2289347333,76 |
| | ³ D ₂ | 2089779268,13 | 2137893436,99 | 2187556790,56 | 2237878494,62 | 2289351197,47 |
| 2s5g | ³ G ₄ | 2090627916,31 | 2139280866,48 | 2188690754,98 | 2238866714,59 | 2289818006,50 |
| | ³ G ₃ | 2090634861,02 | 2139287737,72 | 2188697599,75 | 2238873568,22 | 2289824896,44 |
| | ³ G ₅ | 2090850564,23 | 2139512590,10 | 2188931851,59 | 2239117481,43 | 2290078742,93 |
| | ¹ G ₄ | 2090857062,63 | 2139519054,93 | 2188938314,60 | 2239123967,18 | 2290085270,98 |
| 2p4p | ³ D ₃ | 2091863564,68 | 2140916888,35 | 2190741364,19 | 2241346146,05 | 2292740511,53 |
| | ¹ P ₁ | 2091866812,58 | 2140920255,84 | 2190744781,24 | 2241349606,47 | 2292744012,13 |
| | ³ P ₂ | 2091936068,58 | 2140989751,46 | 2190814428,91 | 2241419383,21 | 2292813902,61 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p4p | ¹ S ₀ | 2092042719,40 | 2141097464,70 | 2190923160,95 | 2241529106,18 | 2292924592,98 |
| 2p4f | ³ F ₃ | 2093964444,35 | 2143107839,37 | 2193025657,94 | 2243727142,38 | 2294964869,56 |
| | ³ F ₂ | 2093990462,67 | 2143134246,25 | 2193052439,71 | 2243754289,49 | 2294999211,52 |
| | ³ G ₄ | 2093998624,07 | 2143141964,64 | 2193059766,29 | 2243761259,77 | 2295221662,05 |
| | ³ D ₁ | 2094033584,79 | 2143178050,98 | 2193096934,38 | 2243799481,36 | 2295249167,64 |
| | ³ F ₄ | 2094697679,57 | 2143870904,37 | 2193819460,26 | 2244495126,67 | 2295255806,69 |
| | ¹ F ₃ | 2094702997,23 | 2143876384,79 | 2193825090,43 | 2244527481,58 | 2295295063,31 |
| | ³ G ₅ | 2094710598,11 | 2143883667,14 | 2193832090,65 | 2244552608,51 | 2295392486,35 |
| | ¹ D ₂ | 2094757133,68 | 2143931197,42 | 2193880581,41 | 2244558378,75 | 2295956662,16 |
| 2p7p | ³ D ₁ | 2097490185,47 | 2145765444,61 | 2194765251,91 | 2244565123,08 | 2296079737,22 |
| | ³ P ₀ | 2097519229,61 | 2145871980,78 | 2194796016,14 | 2244614548,44 | 2296085640,20 |
| 2s6s | ³ S ₁ | 2097738722,69 | 2146161061,99 | 2195170513,90 | 2244911679,33 | 2296092147,76 |
| 2s6s | ¹ S ₀ | 2097757728,00 | 2146161511,96 | 2195171364,63 | 2244914401,70 | 2296142474,15 |
| 2p7p | ³ D ₂ | 2097875514,61 | 2146322013,85 | 2195767021,32 | 2245914367,04 | 2296266362,13 |
| | ³ P ₁ | 2097875793,89 | 2146378463,22 | 2195789292,37 | 2245939342,93 | 2296856570,48 |
| 2p8p | ³ D ₁ | 2102949531,00 | 2151343915,74 | 2200463544,63 | 2250316230,42 | 2300909891,42 |
| | ³ P ₀ | 2103006247,66 | 2151404557,78 | 2200528342,89 | 2250385425,23 | 2300983732,67 |
| | ³ D ₂ | 2103201226,18 | 2151603102,51 | 2200730404,70 | 2250590951,34 | 2301192666,88 |
| | ³ P ₁ | 2103201238,91 | 2151603135,89 | 2200730458,54 | 2250591025,39 | 2301192760,86 |
| 2s7s | ³ S ₁ | 2106069553,03 | 2154886403,76 | 2204393696,63 | 2254333585,17 | 2305017073,14 |
| | ¹ S ₀ | 2106083610,54 | 2154901083,30 | 2204454991,49 | 2254507553,36 | 2305198195,08 |
| 2p9p | ³ D ₁ | 2106709096,29 | 2155188145,82 | 2204470301,46 | 2254555486,99 | 2305244638,78 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p9p | ³ P ₀ | 2106856803,67 | 2155343980,73 | 2204558056,60 | 2254555671,15 | 2305245416,62 |
| | ³ D ₂ | 2106911064,34 | 2155396586,47 | 2204608782,85 | 2254784195,74 | 2305881267,01 |
| | ³ P ₁ | 2106911111,02 | 2155396656,09 | 2204608887,12 | 2254799503,29 | 2305899972,49 |
| 2s8s | ³ S ₁ | 2111430059,79 | 2160360690,55 | 2210044334,28 | 2260489912,10 | 2311706479,97 |
| | ¹ S ₀ | 2111439147,37 | 2160370180,89 | 2210054247,44 | 2260500268,53 | 2311717300,53 |
| 2s9s | ³ S ₁ | 2115095309,83 | 2164107051,98 | 2213866615,80 | 2264392146,43 | 2315689624,73 |
| | ¹ S ₀ | 2115098329,58 | 2164128000,23 | 2213869765,95 | 2264395323,51 | 2315692768,67 |
| 2p5p | ³ D ₂ | 2115571247,95 | 2165099200,46 | 2215451495,94 | 2266566514,42 | 2318477181,38 |
| | ³ P ₁ | 2115571592,33 | 2165122805,92 | 2215452295,31 | 2266567474,01 | 2318478247,35 |
| | ³ D ₃ | 2116868935,30 | 2166458979,71 | 2216826626,25 | 2267981058,23 | 2319931582,80 |
| | ¹ P ₁ | 2116870439,56 | 2166460539,23 | 2216828215,62 | 2267982674,67 | 2319933226,80 |
| | ³ P ₂ | 2116899096,59 | 2166489285,76 | 2216857082,77 | 2268011671,83 | 2319962360,96 |
| | ¹ S ₀ | 2116946020,50 | 2166536686,48 | 2216904870,54 | 2268059827,33 | 2320010877,86 |
| 2p6p | ³ D ₂ | 2129723560,31 | 2179584064,28 | 2230225389,74 | 2281656737,90 | 2333887433,84 |
| | ³ P ₁ | 2129723852,43 | 2179584402,89 | 2230225775,40 | 2281657171,14 | 2333887915,17 |
| 2p6p | ³ D ₃ | 2130375400,53 | 2180253629,24 | 2230912825,54 | 2282362183,97 | 2334611022,81 |
| | ¹ P ₁ | 2130376152,89 | 2180254396,00 | 2230913606,98 | 2282362980,35 | 2334611834,45 |
| | ³ P ₂ | 2130390634,14 | 2180268950,28 | 2230928240,32 | 2282377699,42 | 2334626646,60 |
| | ¹ S ₀ | 2130414610,88 | 2180293074,69 | 2230952510,20 | 2282402112,55 | 2334651200,74 |
| 2p7p | ³ D ₂ | 2138115892,85 | 2188157086,09 | 2238981168,76 | 2290597344,32 | 2343014940,04 |
| | ³ P ₁ | 2138116042,05 | 2188157259,72 | 2238981366,97 | 2290597567,26 | 2343015187,91 |
| | ³ D ₃ | 2138476651,72 | 2188526847,08 | 2239359976,42 | 2290985239,47 | 2343411959,80 |

Tablo 3.1. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|-----------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 2p7p | ¹ P ₁ | 138477070,37 | 2188527273,46 | 2239360410,63 | 2290985681,63 | 2343412410,03 |
| | ³ P ₂ | 2138485226,37 | 2188535471,00 | 2239368654,37 | 2290993976,64 | 2343420761,84 |
| | ¹ S ₀ | 2138498750,44 | 2188549052,20 | 2239382291,19 | 2291007667,54 | 2343434505,33 |
| 2p8p | ³ D ₂ | 2143508738,46 | 2193665369,67 | 2244606200,86 | 2296340437,64 | 2348877409,41 |
| | ³ P ₁ | 2143508816,18 | 2193665460,89 | 2244606305,61 | 2296340555,98 | 2348877541,38 |
| | ³ D ₃ | 2143719131,87 | 2193880450,65 | 2244825970,13 | 2296564893,49 | 2349106547,81 |
| | ¹ P ₁ | 2143719382,10 | 2193880705,15 | 2244826228,96 | 2296565156,71 | 2349106815,46 |
| | ³ P ₂ | 2143726496,03 | 2193888044,68 | 2244833812,24 | 2296573002,94 | 2349114945,01 |
| | ¹ S ₀ | 2143734587,85 | 2193896151,56 | 2244841933,21 | 2296581137,06 | 2349123091,33 |
| | ³ D ₂ | 2147184134,43 | 2197419372,08 | 2248439708,97 | 2300254352,87 | 2352872635,56 |
| 2p9p | ³ P ₁ | 2147184174,42 | 2197419419,51 | 2248439763,84 | 2300254415,18 | 2352872705,27 |
| | ³ D ₃ | 2147301596,44 | 2197538829,03 | 2248561134,96 | 2300377720,49 | 2352997915,78 |
| | ¹ P ₁ | 2147301747,33 | 2197538982,01 | 2248561290,04 | 2300377877,68 | 2352998075,07 |
| | ³ P ₂ | 2147320392,33 | 2197558540,76 | 2248581807,09 | 2300399399,18 | 2353020648,82 |
| | ¹ S ₀ | 2147325438,21 | 2197563582,08 | 2248586843,54 | 2300404430,42 | 2353025674,60 |
| | ³ P ₀ | 2172958713,75 | 2223401017,48 | 2274621862,59 | 2326630436,34 | 2379436059,23 |
| 3s ² | ¹ S ₀ | 2176596878,42 | 2227235903,56 | 2278661405,82 | 2330882742,23 | 2383909402,57 |
| 3p ² | ³ P ₁ | 2181722761,75 | 2232488035,47 | 2284039285,10 | 2336385718,75 | 2389536674,25 |
| 3p ² | ¹ D ₂ | 2181851152,45 | 2232617828,18 | 2284170481,07 | 2336518319,25 | 2389670680,57 |
| | ³ P ₂ | 2190695585,48 | 2241787795,50 | 2293673388,87 | 2346361596,70 | 2399861776,16 |
| | ¹ S ₀ | 2190993338,06 | 2242088813,90 | 2293977697,74 | 2346669220,71 | 2400172739,86 |
| 3p4p | ³ D ₁ | 2233189721,39 | 2285027697,66 | 2337664394,41 | 2391109121,13 | 2445371318,98 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 3p4p | ³ P ₀ | 2233311702,24 | 2285151164,81 | 2337789360,76 | 2391235603,80 | 2445499339,40 |
| 3s4s | ³ S ₁ | 2235584554,74 | 2287549980,03 | 2340318642,52 | 2393899829,99 | 2448302912,59 |
| | ¹ S ₀ | 2235745708,19 | 2287713600,45 | 2340485180,96 | 2394069860,96 | 2448477182,70 |
| 3p4p | ³ D ₂ | 2236245672,33 | 2288180876,00 | 2340916387,97 | 2394461500,00 | 2448825634,73 |
| | ³ P ₁ | 2236264210,77 | 2288201675,40 | 2340939889,18 | 2394488267,97 | 2448856407,21 |
| | ³ P ₁ | 2242166033,17 | 2294330688,49 | 2347301474,24 | 2401087723,70 | 2455698898,10 |
| | ³ D ₂ | 242176714,18 | 2294341395,27 | 2347312203,45 | 2401098471,87 | 2455709661,77 |
| | ³ D ₃ | 2245100868,82 | 2297362146,72 | 2350431143,10 | 2404317172,43 | 2459029676,21 |
| | ¹ P ₁ | 2245105545,59 | 2297366812,89 | 2350435800,86 | 2404321823,92 | 2459034323,50 |
| | ³ P ₂ | 2245205927,93 | 2297467759,80 | 2350537295,32 | 2404423848,91 | 2459136862,13 |
| | ¹ S ₀ | 2245373345,57 | 2297636794,34 | 2350707951,40 | 2404596131,00 | 2459310774,47 |
| 3p5p | ³ D ₁ | 2260019547,52 | 2312455322,20 | 2365697457,12 | 2419755285,84 | 2474638272,96 |
| | ³ P ₀ | 2260175459,42 | 2312617316,70 | 2365865843,41 | 2419930378,85 | 2474820392,94 |
| | ³ D ₂ | 2261364337,94 | 2313840550,84 | 2367123700,74 | 2421223113,26 | 2476148244,85 |
| | ³ P ₁ | 2261560886,14 | 2314090761,93 | 2367446798,08 | 2421643470,35 | 2476629239,74 |
| 3s5s | ³ S ₁ | 2261893721,36 | 2314385755,43 | 2367669036,20 | 2421747900,15 | 2476693048,61 |
| | ¹ S ₀ | 2262115061,20 | 2314662163,80 | 2368019850,18 | 2422197543,24 | 2477204796,78 |
| 3p5p | ³ P ₁ | 2268940616,30 | 2321701688,31 | 2375276468,36 | 2429674311,85 | 2484904701,52 |
| | ³ D ₂ | 2268943676,29 | 2321704723,89 | 2375279477,03 | 2429677291,05 | 2484907648,57 |
| | ³ D ₃ | 2270216128,49 | 2323015161,80 | 2376628358,77 | 2431065063,19 | 2486334746,06 |
| | ¹ P ₁ | 2270217852,75 | 2323016879,63 | 2376630071,03 | 2431066770,71 | 2486336449,60 |
| 3p5p | ³ P ₂ | 2270245319,94 | 2323044755,08 | 2376658378,56 | 2431095535,89 | 2486365699,91 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 3p5p | ¹ S ₀ | 2270315594,89 | 2323115629,07 | 2376729850,05 | 2431167603,27 | 2486438361,46 |
| 3p6p | ³ D ₁ | 2274205631,72 | 2326950269,31 | 2380504917,54 | 2434878913,93 | 2490081726,81 |
| | ³ P ₀ | 2274270030,41 | 2327017866,50 | 2380575855,70 | 2434953339,22 | 2490159788,93 |
| | ³ P ₁ | 2274883524,62 | 2327646947,60 | 2381220648,21 | 2435613952,19 | 2490836317,52 |
| | ³ D ₂ | 2274883871,32 | 2327647591,67 | 2381221547,79 | 2435615072,76 | 2490837630,53 |
| 3s6s | ³ S ₁ | 2276161913,25 | 2329011400,41 | 2382674912,10 | 2437161882,19 | 2492481873,65 |
| | ¹ S ₀ | 2276192372,78 | 2329042244,62 | 2382706204,49 | 2437193678,15 | 2492514221,76 |
| 3p7p | ³ D ₁ | 2282623303,93 | 2335549508,62 | 2389287884,46 | 2443847631,09 | 2499238380,29 |
| | ³ P ₀ | 2282657587,20 | 2335584940,49 | 2389324734,00 | 2443886164,14 | 2499278653,58 |
| | ³ D ₂ | 2283009396,16 | 2335940186,22 | 2389692170,16 | 2444276880,97 | 2499720213,62 |
| | ³ P ₁ | 2283018918,57 | 2335942533,90 | 2389698236,52 | 2444286404,45 | 2499736202,69 |
| 3p6p | ³ D ₂ | 2283114920,71 | 2336181006,28 | 2390060245,27 | 2444755600,43 | 2500256276,42 |
| | ³ P ₁ | 2283115143,02 | 2336182197,74 | 2390063142,96 | 2444761921,80 | 2500269120,12 |
| | ¹ P ₁ | 2283736306,58 | 2336841589,57 | 2390749080,34 | 2445481117,32 | 2501049277,91 |
| | ³ D ₃ | 2283757130,59 | 2336844568,44 | 2390749528,85 | 2445481366,55 | 2501049563,38 |
| | ³ P ₂ | 2283763018,27 | 2336857638,75 | 2390763543,63 | 2445495925,93 | 2501064600,89 |
| | ¹ S ₀ | 2283803180,92 | 2336891479,03 | 2390797042,98 | 2445529370,15 | 2501097984,99 |
| 3s7s | ³ S ₁ | 2284512874,78 | 2337539716,04 | 2391382593,47 | 2446050937,43 | 2501554310,12 |
| | ¹ S ₀ | 2284531841,26 | 2337559440,24 | 2391403123,19 | 2446072325,62 | 2501576616,44 |
| 3p8p | ³ D ₁ | 2288061190,88 | 2341104602,66 | 2394961507,53 | 2449641249,88 | 2505153304,78 |
| | ³ P ₀ | 2288104490,23 | 2341150365,62 | 2395009844,53 | 2449692274,00 | 2505207131,73 |
| | ³ P ₁ | 2288293539,91 | 2341343099,12 | 2395206226,22 | 2449892265,28 | 2505410691,04 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 3p8p | ³ D ₂ | 2288294400,45 | 2341343952,86 | 2395207073,68 | 2449893106,90 | 2505411527,26 |
| 3s8s | ³ S ₁ | 2289877789,91 | 2343018325,07 | 2396976138,53 | 2451760658,21 | 2507381442,51 |
| 3s8s | ¹ S ₀ | 2289888897,72 | 2343029862,21 | 2396988122,50 | 2451773106,86 | 2507394373,84 |
| 3p7p | ³ P ₁ | 2291520373,67 | 2344771002,35 | 2398841029,15 | 2453613805,23 | 2509210376,73 |
| | ³ D ₂ | 2291520887,74 | 2344771478,79 | 2398841450,27 | 2453719252,35 | 2509322904,92 |
| 3p9p | ³ D ₁ | 2291786648,18 | 2344911403,01 | 2398850668,62 | 2453739777,38 | 2509397805,95 |
| 3p7p | ³ D ₃ | 2291874185,87 | 2345007652,96 | 2398951310,59 | 2453740114,48 | 2509398702,52 |
| | ¹ P ₁ | 2291874676,22 | 2345084432,19 | 2399028353,12 | 2453796285,20 | 2509476653,75 |
| 3p9p | ³ P ₀ | 2291878712,39 | 2345085027,60 | 2399029001,78 | 2453797020,63 | 2509476856,43 |
| 3p7p | ³ P ₂ | 2291881312,93 | 2345133748,57 | 2399212803,75 | 2454120711,78 | 2509866960,12 |
| | ¹ S ₀ | 2291900972,90 | 2345134219,67 | 2399213247,27 | 2454121103,13 | 2509867174,00 |
| 3p9p | ³ P ₁ | 2291955129,06 | 2345141071,90 | 2399220332,89 | 2454128448,62 | 2509874872,96 |
| | ³ D ₂ | 2291955689,95 | 2345160755,76 | 2399239957,51 | 2454147719,52 | 2509891559,91 |
| 3s9s | ³ S ₁ | 2293549848,57 | 2346768583,72 | 2400805473,14 | 2455669944,96 | 2511371557,57 |
| | ¹ S ₀ | 2293561939,20 | 2346781163,17 | 2400818559,38 | 2455683556,25 | 2511385712,50 |
| 4p ² | ³ P ₀ | 2293927947,76 | 2347169916,54 | 2401230750,62 | 2456119885,41 | 2511846886,21 |
| 4s ² | ¹ S ₀ | 2295162319,30 | 2348462553,97 | 2402583719,64 | 2457535279,86 | 2513326827,62 |
| 4p ² | ³ P ₁ | 2296854053,69 | 2350191128,23 | 2404348617,10 | 2459335956,97 | 2515162704,74 |
| 3p8p | ³ P ₁ | 2296922754,50 | 2350264520,18 | 2404423132,94 | 2459411503,86 | 2515239231,24 |
| | ³ D ₂ | 2296924652,57 | 2350288840,27 | 2404475746,81 | 2459492820,08 | 2515349541,88 |
| 4p ² | ¹ D ₂ | 2296926138,72 | 2350290293,92 | 2404476940,38 | 2459493847,99 | 2515350457,33 |
| 3p8p | ³ D ₃ | 2297126755,42 | 2350497607,92 | 2404689223,53 | 2459710966,11 | 2515572326,72 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 3p8p | ¹ P ₁ | 2297127033,14 | 2350497884,07 | 2404689498,23 | 2459711239,53 | 2515572599,00 |
| | ³ P ₂ | 2297133702,44 | 2350504930,05 | 2404696947,25 | 2459719119,21 | 2515580938,30 |
| | ¹ S ₀ | 2297145314,05 | 2350516586,52 | 2404708647,53 | 2459730862,33 | 2515592723,30 |
| 4p ² | ³ P ₂ | 2299884915,19 | 2353319125,91 | 2407575392,25 | 2462663111,96 | 2518591810,87 |
| | ¹ S ₀ | 2300048611,91 | 2353484538,12 | 2407742530,79 | 2462831987,61 | 2518762434,34 |
| 3p9p | ³ P ₁ | 2300603799,30 | 2354048863,74 | 2408315597,72 | 2463413369,86 | 2519351675,99 |
| | ³ D ₂ | 2300604083,12 | 2354049145,22 | 2408315876,87 | 2463413646,69 | 2519351950,49 |
| | ³ D ₃ | 2300716134,44 | 2354163078,38 | 2408431664,40 | 2463531259,61 | 2519471358,30 |
| | ¹ P ₁ | 2300716273,48 | 2354163216,82 | 2408431802,34 | 2463531397,06 | 2519471495,36 |
| | ³ P ₂ | 2300738312,34 | 2354186392,42 | 2408456165,09 | 2463556999,00 | 2519498389,93 |
| | ¹ S ₀ | 2300745851,33 | 2354193939,81 | 2408463721,07 | 2463564563,71 | 2519505963,56 |
| 4p5p | ³ D ₁ | 2320805290,63 | 2374644226,53 | 2429309635,42 | 2484810973,05 | 2541157824,63 |
| | ³ P ₀ | 2321164156,85 | 2375011999,42 | 2429686610,03 | 2485197448,32 | 2541554102,50 |
| 4s5s | ¹ S ₀ | 2321606317,93 | 2375488036,27 | 2430197604,03 | 2485744492,65 | 2542138302,83 |
| | ³ S ₁ | 2321628339,70 | 2375508383,03 | 2430216258,29 | 2485761440,95 | 2542153535,36 |
| 4p5p | ³ D ₂ | 2322257803,24 | 2376143515,41 | 2430856574,43 | 2486406434,63 | 2542802679,12 |
| | ³ S ₁ | 2322258840,15 | 2376144627,90 | 2430857783,01 | 2486407760,50 | 2542804144,18 |
| | ³ P ₁ | 2323748592,66 | 2377678227,44 | 2432435561,20 | 2488030019,55 | 2544471156,53 |
| | ¹ D ₂ | 2323752084,27 | 2377681832,21 | 2432439292,19 | 2488033890,39 | 2544475181,44 |
| | ³ D ₃ | 2325069560,52 | 2379042600,60 | 2433844147,29 | 2489483627,21 | 2545970595,14 |
| | ¹ P ₁ | 2325074937,48 | 2379047950,57 | 2433849472,35 | 2489488929,40 | 2545975876,41 |
| | ³ P ₂ | 2325126293,22 | 2379099893,59 | 2433902005,91 | 2489542056,46 | 2546029599,57 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 4p5p | ¹ S ₀ | 2325241869,86 | 2379216472,34 | 2434019590,49 | 2489660650,41 | 2546149206,31 |
| 4p6p | ³ D ₁ | 2335076018,94 | 2389225192,85 | 2444204525,66 | 2500023475,77 | 2556691630,52 |
| | ³ P ₀ | 2335165697,83 | 2389318778,86 | 2444302118,36 | 2500125178,93 | 2556797551,74 |
| 4s6s | ³ S ₁ | 2335733568,90 | 2389916869,57 | 2444919494,42 | 2500758486,44 | 2557446897,90 |
| 4p6p | ³ D ₂ | 2335751565,23 | 2389920338,74 | 2444928352,39 | 2500767425,46 | 2557455922,09 |
| | ³ P ₁ | 2335760273,32 | 2389929119,76 | 2444931452,87 | 2500786797,97 | 2557492512,79 |
| 4s6s | ¹ S ₀ | 2335785742,91 | 2389969659,27 | 2444984881,53 | 2500840883,61 | 2557547268,33 |
| 4p6p | ³ P ₁ | 2338032584,47 | 2392277043,97 | 2447353199,65 | 2503270493,90 | 2560038497,19 |
| 4p6p | ³ D ₂ | 2338034271,15 | 2392278736,39 | 2447354896,85 | 2503272194,90 | 2560040201,02 |
| | ³ D ₃ | 2338661755,12 | 2392923462,99 | 2448017012,04 | 2503951838,21 | 2560737505,58 |
| | ¹ P ₁ | 2338664427,60 | 2392926119,41 | 2448019653,44 | 2503954465,63 | 2560740120,01 |
| | ³ P ₂ | 2338681293,13 | 2392943752,82 | 2448038099,11 | 2503973769,87 | 2560760331,15 |
| | ¹ S ₀ | 2338737549,38 | 2393000478,92 | 2448095295,94 | 2504031438,28 | 2560818471,92 |
| 4p7p | ³ D ₁ | 2343514164,98 | 2397845516,95 | 2453009153,38 | 2509014536,97 | 2565871259,30 |
| | ³ P ₀ | 2343558819,94 | 2397891113,08 | 2453055704,25 | 2509062058,64 | 2565919770,11 |
| | ³ D ₂ | 2343880754,91 | 2398221766,87 | 2453395130,55 | 2509410305,84 | 2566276881,59 |
| | ³ P ₁ | 2343896617,84 | 2398238137,16 | 2453412039,73 | 2509427787,88 | 2566294973,02 |
| 4s7s | ³ S ₁ | 2344100966,01 | 2398461495,73 | 2453655235,20 | 2509691660,83 | 2566580377,39 |
| | ¹ S ₀ | 2344131833,21 | 2398493932,00 | 2453689319,64 | 2509727472,96 | 2566617997,73 |
| 4p7p | ³ P ₁ | 2346449489,83 | 2400874640,78 | 2456133542,77 | 2512235639,51 | 2569190502,75 |
| | ³ D ₂ | 2346450435,13 | 2400875586,30 | 2456134488,16 | 2512236584,44 | 2569191446,82 |
| | ³ D ₃ | 2346800633,45 | 2401234875,52 | 2456502943,86 | 2512614280,88 | 2569578457,09 |

Tablo 3.1. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 4p7p | ¹ P ₁ | 2346801832,03 | 2401236064,44 | 2456504123,63 | 2512615451,97 | 2569579619,98 |
| | ³ P ₂ | 2346803692,43 | 2401237869,11 | 2456505855,82 | 2512617093,30 | 2569581150,78 |
| | ¹ S ₀ | 346833732,30 | 2401268128,79 | 2456536334,86 | 2512647791,22 | 2569612066,95 |
| 5s ² | ¹ S ₀ | 2348286496,35 | 2402747757,96 | 2458045646,35 | 2514191078,38 | 2571196787,10 |
| 4p8p | ³ D ₁ | 2348945203,04 | 2403393118,66 | 2458674649,30 | 2514799259,76 | 2571776543,75 |
| | ³ P ₀ | 2349037299,25 | 2403488522,43 | 2458773401,41 | 2514901400,29 | 2571882112,17 |
| | ³ D ₂ | 2349176853,07 | 2403630898,47 | 2458918609,83 | 2515049450,46 | 2572033012,56 |
| | ³ P ₁ | 2349207053,20 | 2403663507,91 | 2458953944,12 | 2515087879,90 | 2572074974,09 |
| 4s8s | ³ S ₁ | 2349463816,87 | 2403936204,39 | 2459242768,06 | 2515392930,73 | 2572396231,43 |
| | ¹ S ₀ | 2349505640,97 | 2403981190,05 | 2459291261,70 | 2515445335,34 | 2572453019,19 |
| 4p8p | ³ P ₁ | 2351862548,14 | 2406403705,78 | 2461779960,73 | 2518000761,19 | 2575075683,39 |
| 4p8p | ³ D ₂ | 2351863265,69 | 2406404420,64 | 2461780672,42 | 2518001469,21 | 2575076387,27 |
| | ³ D ₃ | 2352062421,85 | 2406608043,33 | 2461988761,90 | 2518214023,51 | 2575293402,28 |
| | ¹ P ₁ | 2352062965,32 | 2406608580,87 | 2461989293,81 | 2518214550,14 | 2575293923,93 |
| | ³ P ₂ | 2352070673,78 | 2406616822,90 | 2461998100,80 | 2518223954,66 | 2575303959,84 |
| | ¹ S ₀ | 2352088725,16 | 2406634988,54 | 2462016380,45 | 2518242348,05 | 2575322466,72 |
| 4p9p | ³ D ₁ | 2352654660,87 | 2407182627,32 | 2462545143,99 | 2518751678,17 | 2575811825,89 |
| | ³ P ₀ | 2352717495,47 | 2407247960,66 | 2462613033,34 | 2518822180,70 | 2575884998,66 |
| | ³ P ₁ | 2352805019,73 | 2407336688,76 | 2462702936,84 | 2518913230,65 | 2575977165,74 |
| | ³ D ₂ | 2352806537,55 | 2407338189,03 | 2462704421,89 | 2518914702,73 | 2575978626,96 |
| 4s9s | ³ S ₁ | 2353179199,52 | 2407731917,22 | 2463119966,95 | 2519352824,98 | 2576440096,10 |
| | ¹ S ₀ | 2353188540,72 | 2407741490,19 | 2463129772,32 | 2519362863,22 | 2576450367,51 |

Tablo 3.1. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|-----------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 4p9p | ³ P ₁ | 2355546747,56 | 2410166558,50 | 2465622362,34 | 2521923609,12 | 2579079876,96 |
| | ³ D ₂ | 2355547279,61 | 2410167094,75 | 2465622902,82 | 2521924153,88 | 2579080426,03 |
| | ³ D ₃ | 2355657278,86 | 2410279029,19 | 2465736751,79 | 2522039895,53 | 2579198037,39 |
| | ¹ P ₁ | 2355657638,95 | 2410279385,27 | 2465737104,00 | 2522040244,04 | 2579198382,34 |
| | ³ P ₂ | 2355676511,80 | 2410299250,46 | 2465757999,93 | 2522062209,88 | 2579221458,05 |
| | ¹ S ₀ | 2355687555,70 | 2410310340,68 | 2465769136,34 | 2522073392,36 | 2579232686,48 |
| 5p6p | ³ S ₁ | 2362628324,38 | 2417409950,55 | 2473004646,31 | 2529440404,29 | 2586725956,12 |
| 5s6s | ¹ S ₀ | 2362670493,93 | 2417417294,01 | 2473007992,05 | 2529441599,22 | 2586737397,90 |
| 5s7s | ³ S ₁ | 2370911081,70 | 2425841489,98 | 2481614009,08 | 2538237614,94 | 2595721547,07 |
| | ¹ S ₀ | 2370952765,67 | 2425886305,41 | 2481661311,32 | 2538286973,77 | 2595772677,85 |
| 5s8s | ³ S ₁ | 2376238974,35 | 2431288968,91 | 2487180815,60 | 2543923886,47 | 2601527738,81 |
| 6p ² | ¹ S ₀ | 2376524978,52 | 2431413312,23 | 2487247055,94 | 2543981698,53 | 2601583828,11 |

Tablo 3.2. Helyum benzeri Aynştaynyum, Fermiyum, Mendelevyum, Nobelyum, Lavrensiyum için tek pariteli seviyelerinin enerjileri (cm^{-1})

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 1s2p | ³ P ^o ₁ | 898312098,31 | 918840198,81 | 939669065,27 | 2610466315,92 | 982241415,49 |
| | ³ P ^o ₀ | 899200932,22 | 919764969,92 | 940630692,02 | 2610466315,92 | 983279553,66 |
| | ³ P ^o ₂ | 937926830,99 | 960195081,02 | 982822665,37 | 2610466315,92 | 1029173697,90 |
| | ¹ P ^o ₁ | 938980703,64 | 961272326,41 | 983923708,22 | 2610466315,92 | 1030323632,58 |
| 1s3p | ³ P ^o ₁ | 1081952667,20 | 1107199703,65 | 1132840867,58 | 2610466315,92 | 1185324740,14 |
| | ³ P ^o ₀ | 1082105784,85 | 1107357469,92 | 1133003324,31 | 2610466315,92 | 1185496697,75 |
| | ³ P ^o ₂ | 1090891189,99 | 1116473611,54 | 1142458331,08 | 2610466315,92 | 1195654109,41 |
| | ¹ P ^o ₁ | 1091171715,52 | 1116759915,91 | 1142750500,02 | 2610466315,92 | 1195958267,02 |
| 1s4p | ³ P ^o ₁ | 1139803637,86 | 1166330148,53 | 1193265836,36 | 2610466315,92 | 1248383786,84 |
| | ³ P ^o ₀ | 1139849750,24 | 1166377328,74 | 1193314076,35 | 2610466315,92 | 1248434119,10 |
| | ³ P ^o ₂ | 1142769750,35 | 1169389605,18 | 1196419864,66 | 2610466315,92 | 1251730470,31 |
| | ¹ P ^o ₁ | 1142870540,49 | 1169492062,08 | 1196523995,26 | 2610466315,92 | 1251837966,21 |
| 1s4f | ³ F ^o ₃ | 1148565378,74 | 1175503700,71 | 1202866859,87 | 2610466315,92 | 1258888582,28 |
| | ³ F ^o ₂ | 1148583503,60 | 1175522409,53 | 1202886165,81 | 2610466315,92 | 1258909122,61 |
| | ³ F ^o ₄ | 1149313661,52 | 1176283772,17 | 1203679748,22 | 2610466315,92 | 1259770283,45 |
| | ¹ F ^o ₃ | 1149326803,53 | 1176297330,72 | 1203693732,39 | 2610466315,92 | 1259785146,59 |
| 1s5p | ³ P ^o ₁ | 1166414785,38 | 1193532905,57 | 1221067414,70 | 2610466315,92 | 1277404618,92 |
| | ³ P ^o ₀ | 1166433837,45 | 1193552353,62 | 1221087254,91 | 2610466315,92 | 1277425231,44 |
| | ³ P ^o ₂ | 1167714560,59 | 1194870402,31 | 1222443036,66 | 2610466315,92 | 1278857645,02 |
| | ¹ P ^o ₁ | 1167760762,23 | 1194917265,90 | 1222490562,61 | 2610466315,92 | 1278906495,87 |
| 1s5f | ³ F ^o ₃ | 1172752841,23 | 1200198092,31 | 1228073807,24 | 2610466315,92 | 1285137589,81 |
| | ³ F ^o ₂ | 1172761806,74 | 1200207335,48 | 1228083333,70 | 2610466315,92 | 1285147700,02 |

Tablo 3.2. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|--|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 1s5f | ³ F ^o ₄ | 1173128735,95 | 1200589621,25 | 1228481455,10 | 2610466315,92 | 1285578969,47 |
| | ¹ F ^o ₃ | 1173135447,47 | 1200596541,84 | 1228488589,13 | 2610466315,92 | 1285586543,75 |
| 1s6p | ³ P ^o ₁ | 1180544210,81 | 1207970711,03 | 1235817236,07 | 2610466315,92 | 1292789392,42 |
| | ³ F ^o ₀ | 1180553427,01 | 1207980097,29 | 1235826790,08 | 2610466315,92 | 1292799274,70 |
| | ³ F ^o ₂ | 1181200493,56 | 1208644493,66 | 1236508649,83 | 2610466315,92 | 1293516433,97 |
| | ¹ P ^o ₁ | 1181224694,11 | 1208668987,86 | 1236533436,52 | 2610466315,92 | 1293541801,70 |
| 1s6f | ³ F ^o ₃ | 1185925923,05 | 1213647934,52 | 1241803506,04 | 2610466315,92 | 1299436329,64 |
| | ³ F ^o ₂ | 1185930880,68 | 1213653038,02 | 1241808757,97 | 2610466315,92 | 1299441886,19 |
| | ³ F ^o ₄ | 1186136666,48 | 1213867177,65 | 1242031496,69 | 2610466315,92 | 1299682576,13 |
| | ¹ F ^o ₃ | 1186140484,64 | 1213871111,06 | 1242035547,61 | 2610466315,92 | 1299686868,89 |
| 1s7p | ³ P ^o ₁ | 1188928328,21 | 1216535382,10 | 1244564517,04 | 2610466315,92 | 1301908067,49 |
| | ³ P ^o ₀ | 1188933264,80 | 1216540399,32 | 1244569613,42 | 2610466315,92 | 1301913317,86 |
| | ³ P ^o ₂ | 1189292418,63 | 1216908378,37 | 1244946458,56 | 2610466315,92 | 1302308003,06 |
| | ¹ P ^o ₁ | 1189306288,35 | 1217712496,43 | 1244960603,72 | 2610466315,92 | 1302322418,44 |
| 1s7f | ³ F ^o ₃ | 1193868071,83 | 1221756855,16 | 1250081056,96 | 2610466315,92 | 1307755776,49 |
| | ³ F ^o ₂ | 1193871042,60 | 1221759908,15 | 1250084193,37 | 2610466315,92 | 1307758725,70 |
| | ³ F ^o ₄ | 1193996028,41 | 1221889780,08 | 1250176064,17 | 2610466315,92 | 1307988082,30 |
| | ¹ F ^o ₃ | 1193998379,19 | 1221892198,92 | 1250178939,34 | 2610466315,92 | 1307996740,06 |
| 1s8p | ³ P ^o ₁ | 1194308837,70 | 1222030770,30 | 1250219084,59 | 2610466315,92 | 1308056737,94 |
| | ³ P ^o ₀ | 1194311635,13 | 1222033607,06 | 1250221572,64 | 2610466315,92 | 1308060044,97 |
| | ³ P ^o ₂ | 1194522310,30 | 1222248946,69 | 1250398948,70 | 2610466315,92 | 1308205381,29 |
| | ¹ P ^o ₁ | 1194530721,86 | 1222257421,34 | 1250407485,42 | 2610466315,92 | 1308208011,50 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 1s9p | ³ P ₀ ^o | 1198052509,16 | 1225857294,95 | 1254086547,50 | 2610466315,92 | 1311837532,61 |
| | ³ P ₀ ^o | 1198054115,00 | 1225858919,75 | 1254088190,73 | 2610466315,92 | 1311839211,33 |
| | ³ P ₂ ^o | 1198180289,31 | 1225987550,42 | 1254219276,67 | 2610466315,92 | 1311975201,97 |
| | ¹ P ₁ ^o | 1198185546,13 | 1225992830,71 | 1254224579,94 | 2610466315,92 | 1311980549,66 |
| 1s8f | ³ F ₃ ^o | 1199017683,90 | 1227014459,77 | 1255447850,54 | 2610466315,92 | 1313645511,08 |
| | ³ F ₂ ^o | 1199019568,75 | 1227016392,75 | 1255449832,22 | 2610466315,92 | 1313647591,79 |
| | ³ F ₄ ^o | 1199100042,91 | 1227099858,90 | 1255536364,12 | 2610466315,92 | 1313740479,47 |
| | ¹ F ₃ ^o | 1199101579,17 | 1227101437,08 | 1255537984,90 | 2610466315,92 | 1313742187,30 |
| 1s9f | ³ F ₃ ^o | 1202543558,80 | 1230614190,66 | 1259122255,05 | 2610466315,92 | 1317471723,56 |
| | ³ F ₂ ^o | 1202544800,24 | 1230615459,45 | 1259123551,36 | 2610466315,92 | 1317473075,46 |
| | ³ F ₄ ^o | 1202598986,29 | 1230671481,14 | 1259181446,71 | 2610466315,92 | 1317534832,69 |
| | ¹ F ₃ ^o | 1202600044,16 | 1230672564,71 | 1259182556,27 | 2610466315,92 | 1317535995,08 |
| 2s2p | ³ P ₀ ^o | 1812834529,30 | 1854539289,07 | 1896874415,19 | 2610466315,92 | 1983464872,52 |
| | ³ F ₁ ^o | 1813251658,61 | 1854961004,71 | 1897300705,55 | 2610466315,92 | 1983900276,09 |
| | ³ F ₂ ^o | 1853249880,78 | 1896712791,22 | 1940864856,49 | 2610466315,92 | 2031271101,60 |
| | ¹ P ₁ ^o | 1854287919,09 | 1897764270,79 | 1941929864,15 | 2610466315,92 | 2032363426,72 |
| 2p3s | ³ P ₀ ^o | 1990035124,67 | 2035935294,91 | 2082530107,21 | 2610466315,92 | 2177834796,25 |
| | ³ P ₁ ^o | 1990038362,21 | 2035938141,98 | 2082532561,02 | 2610466315,92 | 2177836456,43 |
| 2s3p | ³ P ₀ ^o | 1998639222,67 | 2045069632,66 | 2092221394,97 | 2610466315,92 | 2188724210,66 |
| | ³ P ₁ ^o | 1998655433,18 | 2045085487,11 | 2092236855,58 | 2610466315,92 | 2188738767,23 |
| | ³ P ₂ ^o | 2007706949,16 | 2054479270,85 | 2101981568,69 | 2610466315,92 | 2199211733,50 |
| | ¹ P ₁ ^o | 2007784971,74 | 2054557861,62 | 2102060727,22 | 2610466315,92 | 2199292026,04 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|---|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 2p3d | ¹ P ₀ ^o ₁ | 2020448868,69 | 2067594815,11 | 2115474011,22 | 2610466315,92 | 2213466500,26 |
| | ³ P ₂ ^o | 2023173145,87 | 2070443380,74 | 2118451030,03 | 2610466315,92 | 2216713313,15 |
| 2p3s | ³ P ₂ ^o | 2030566594,29 | 2078226965,55 | 2126640767,16 | 2610466315,92 | 2225765342,73 |
| | ¹ P ₀ ^o ₁ | 2030651200,72 | 2078312267,80 | 2126726765,08 | 2610466315,92 | 2225852732,12 |
| 2p3d | ³ P ₀ ^o | 2038377673,11 | 2086280053,46 | 2134939624,45 | 2610466315,92 | 2234566767,96 |
| | ³ P ₁ ^o | 2041422763,72 | 2089451688,13 | 2138241918,64 | 2610466315,92 | 2238143108,85 |
| 2p4s | ³ P ₀ ^o | 2052479860,14 | 2099917306,93 | 2148076499,26 | 2610466315,92 | 2246592834,02 |
| | ³ P ₁ ^o | 2052501122,02 | 2099938965,95 | 2148098566,55 | 2610466315,92 | 2246615752,98 |
| 2s4p | ³ P ₁ ^o | 2056826190,70 | 2104560658,13 | 2153033892,29 | 2610466315,92 | 2252232427,84 |
| | ³ P ₀ ^o | 2056837292,49 | 2104572029,46 | 2153045538,23 | 2610466315,92 | 2252244637,33 |
| | ³ P ₂ ^o | 2059777620,29 | 2107604759,35 | 2156171928,66 | 2610466315,92 | 2255561991,92 |
| | ¹ P ₀ ^o ₁ | 2059807781,20 | 2107635156,72 | 2156202565,55 | 2610466315,92 | 2255593117,32 |
| 2s4f | ³ F ₃ ^o | 2066051928,51 | 2114181563,96 | 2163062063,67 | 2610466315,92 | 2263112139,81 |
| | ³ F ₂ ^o | 2066057856,55 | 2114187896,52 | 2163068812,55 | 2610466315,92 | 2263119757,52 |
| | ³ F ₄ ^o | 2066789208,37 | 2114950493,18 | 2163863669,94 | 2610466315,92 | 2263982277,86 |
| | ¹ F ₃ ^o | 2066817101,93 | 2114978963,76 | 2163892727,01 | 2610466315,92 | 2264012536,74 |
| 2p4d | ¹ P ₀ ^o ₁ | 2074132571,15 | 2122441035,93 | 2171497363,29 | 2610466315,92 | 2271888381,36 |
| | ³ P ₂ ^o | 2075184433,60 | 2123537320,32 | 2172639346,32 | 2610466315,92 | 2273125665,42 |
| 2p5s | ³ P ₀ ^o | 2078919481,34 | 2126938814,91 | 2175686999,31 | 2610466315,92 | 2275402672,60 |
| | ³ P ₁ ^o | 2078923112,07 | 2126942450,08 | 2175690638,71 | 2610466315,92 | 2275406320,32 |
| 2s5p | ³ P ₁ ^o | 2083472895,08 | 2131798265,98 | 2180869634,22 | 2610466315,92 | 2281286148,83 |
| | ³ P ₀ ^o | 2083473268,05 | 2131798695,86 | 2180870121,59 | 2610466315,92 | 2281286751,95 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 2s5p | ³ P ₀ ^o | 2084769774,08 | 2133132988,72 | 2182242626,54 | 2610466315,92 | 2282736908,73 |
| | ¹ P ₁ ^o | 2084782805,78 | 2133146130,84 | 2182255877,01 | 2610466315,92 | 2282750370,98 |
| 2p4s | ³ P ₀ ^o | 2089745010,45 | 2138750478,32 | 2188272795,44 | 2610466315,92 | 2289365018,22 |
| | ¹ P ₁ ^o | 2089767748,09 | 2138773322,42 | 2188274704,98 | 2610466315,92 | 2289367307,98 |
| 2s5f | ³ F ₃ ^o | 2090243090,16 | 2138879697,21 | 2188527570,69 | 2610466315,92 | 2289799286,25 |
| | ³ F ₂ ^o | 2090244648,72 | 2138881436,64 | 2188550505,94 | 2610466315,92 | 2289815854,37 |
| | ³ F ₄ ^o | 2090612213,81 | 2139264370,30 | 2188673502,43 | 2610466315,92 | 2290433589,57 |
| | ¹ F ₃ ^o | 2090627586,70 | 2139280035,48 | 2188689464,21 | 2610466315,92 | 2290456588,64 |
| 2p4d | ³ P ₀ ^o | 2092316531,58 | 2141278109,26 | 2190334277,92 | 2610466315,92 | 2290673023,62 |
| 2p6s | ³ P ₀ ^o | 2092958280,17 | 2141281271,48 | 2190335722,41 | 2610466315,92 | 2290674453,55 |
| | ³ P ₁ ^o | 2092959096,27 | 2141390599,81 | 2191232630,62 | 2610466315,92 | 2293272801,02 |
| 2p4d | ³ P ₁ ^o | 2093463603,63 | 2142579073,29 | 2192467533,24 | 2610466315,92 | 2294599831,80 |
| 2s6p | ³ P ₁ ^o | 2097619692,93 | 2146253515,86 | 2195636968,82 | 2610466315,92 | 2296688587,01 |
| | ³ P ₀ ^o | 2097620410,81 | 2146254201,19 | 2195637641,66 | 2610466315,92 | 2296689285,45 |
| 2p5g | ¹ F ₃ ^o | 2098080627,39 | 2146905479,51 | 2196326195,95 | 2610466315,92 | 2297413683,03 |
| 2s6p | ³ P ₀ ^o | 2098273587,99 | 2146925007,61 | 2196333670,41 | 2610466315,92 | 2297421256,19 |
| | ¹ P ₁ ^o | 2098281037,30 | 2146932461,88 | 2196485151,59 | 2610466315,92 | 2297944085,98 |
| 2p5g | ³ F ₄ ^o | 2098291628,02 | 2147125173,22 | 2196713804,01 | 2610466315,92 | 2298191474,20 |
| 2p5d | ¹ P ₁ ^o | 2099008094,30 | 2147854517,92 | 2197455732,11 | 2610466315,92 | 2298957826,01 |
| | ³ P ₀ ^o | 2099479105,94 | 2148342632,96 | 2197961061,73 | 2610466315,92 | 2299497527,51 |
| 2p7s | ³ P ₀ ^o | 2101299899,77 | 2149800088,52 | 2199034576,40 | 2610466315,92 | 2299739211,82 |
| | ³ P ₁ ^o | 2101300449,31 | 2149800624,30 | 2199035097,78 | 2610466315,92 | 2299739705,42 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 2s6f | ³ F ^o ₃ | 2103418672,40 | 2152332066,62 | 2202005048,23 | 2610466315,92 | 2303666365,61 |
| | ³ F ^o ₂ | 2103419253,87 | 2152332739,53 | 202005815,10 | 2610466315,92 | 2303667328,05 |
| | ³ F ^o ₄ | 2103625280,56 | 2152547125,12 | 2202228804,88 | 2610466315,92 | 2303908279,23 |
| | ¹ F ^o ₃ | 2103634198,76 | 2152556200,63 | 2202238039,75 | 2610466315,92 | 2303917838,99 |
| 2s7p | ³ P ^o ₀ | 2106011967,88 | 2154826068,54 | 2204391422,80 | 2610466315,92 | 2305558370,85 |
| | ³ F ^o ₁ | 2106012275,52 | 2154826483,74 | 2204392196,45 | 2610466315,92 | 2305559237,31 |
| | ³ F ^o ₂ | 2106374560,51 | 2155197816,72 | 2204621946,35 | 2610466315,92 | 2305816339,99 |
| | ¹ P ^o ₁ | 2106378158,78 | 2155200480,07 | 2204622997,74 | 2610466315,92 | 2305817073,93 |
| 2p8s | ³ P ^o ₀ | 2106658983,01 | 2155272993,98 | 2204772824,46 | 2610466315,92 | 2306213892,68 |
| | ³ P ^o ₁ | 2106659375,50 | 2155274208,33 | 2204777388,83 | 2610466315,92 | 2306218031,91 |
| 2p9s | ³ P ^o ₀ | 2110390926,15 | 2159086855,21 | 2208519404,73 | 2610466315,92 | 2309627158,68 |
| | ³ P ^o ₁ | 2110390941,97 | 2159086871,91 | 2208519421,56 | 2610466315,92 | 2309627174,44 |
| 2s7f | ³ F ^o ₃ | 2111362303,62 | 2160325942,30 | 2210008106,92 | 2610466315,92 | 2311667213,66 |
| | ³ F ^o ₂ | 2111362567,98 | 2160325958,63 | 2210008117,90 | 2610466315,92 | 2311667216,45 |
| 2s8p | ³ P ^o ₀ | 2111396765,85 | 2161430120,98 | 2210229584,85 | 2610466315,92 | 2311898191,45 |
| | ³ P ^o ₁ | 2111396786,04 | 2161430438,14 | 2210232022,28 | 2610466315,92 | 2311900632,19 |
| 2s7f | ³ F ^o ₄ | 2111487600,30 | 2160542678,01 | 2210284109,11 | 2610466315,92 | 2312288311,07 |
| | ¹ F ^o ₃ | 2111493123,96 | 2160545114,60 | 2210284480,82 | 2610466315,92 | 2312288794,91 |
| 2s8p | ³ P ^o ₂ | 2111608764,83 | 2160572719,24 | 2210419418,31 | 2610466315,92 | 2312434177,74 |
| | ¹ P ^o ₁ | 2111611202,45 | 2160578332,49 | 2210425122,13 | 2610466315,92 | 2312440065,61 |
| 2p6d | ¹ P ^o ₁ | 2113492337,91 | 2162688924,80 | 2212646416,69 | 2610466315,92 | 2314879548,46 |
| | ³ P ^o ₂ | 2113745915,20 | 2162951298,74 | 2212917803,67 | 2610466315,92 | 2315169596,56 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 2s9p | ³ P ₀ | 2115137533,11 | 2164148705,31 | 2213913884,13 | 2610466315,92 | 2315742099,93 |
| | ³ P ₁ | 2115137798,91 | 2164148969,64 | 2213914147,44 | 2610466315,92 | 2315742373,49 |
| | ³ P ₂ | 2115263092,60 | 2164276698,85 | 2214044306,82 | 2610466315,92 | 2315877385,40 |
| | ¹ P ₁ | 2115264482,76 | 2164278094,75 | 2214045701,52 | 2610466315,92 | 2315878753,06 |
| 2p5s | ³ P ₂ | 2116131356,88 | 2165700981,36 | 2215651803,31 | 2610466315,92 | 2317877999,31 |
| | ¹ P ₁ | 2116140070,13 | 2165701144,51 | 2215652005,51 | 2610466315,92 | 2317878270,52 |
| 2s8f | ³ F ₃ | 2116512801,47 | 2165715419,23 | 2215738478,92 | 2610466315,92 | 2317971095,56 |
| | ³ F ₂ | 2116512937,92 | 2165724124,27 | 2215742199,77 | 2610466315,92 | 2317974923,40 |
| | ³ F ₄ | 2116593357,11 | 2165784559,74 | 2216078051,61 | 2610466315,92 | 2319176145,43 |
| | ¹ F ₃ | 2116596972,53 | 2165788227,69 | 2216086766,70 | 2610466315,92 | 2319184875,86 |
| 2p5d | ³ P ₀ | 2117273146,60 | 2166884286,88 | 2217274090,83 | 2610466315,92 | 2320426711,64 |
| | ³ P ₁ | 2117807682,97 | 2167437858,22 | 2217847181,05 | 2610466315,92 | 2321040290,67 |
| 2p5g | ³ F ₂ | 2118546947,19 | 2168211291,24 | 2218656019,60 | 2610466315,92 | 2321704784,82 |
| | ³ F ₃ | 2118757451,68 | 2168430459,50 | 2218884115,62 | 2610466315,92 | 2321704945,47 |
| 2s9f | ³ F ₃ | 2120039229,95 | 2169301271,01 | 2219326771,76 | 2610466315,92 | 2321766560,93 |
| | ³ F ₂ | 2120039306,41 | 2169301368,50 | 2219326890,63 | 2610466315,92 | 2321769161,24 |
| | ³ F ₄ | 2120093358,45 | 2169357253,61 | 2219384646,71 | 2610466315,92 | 2321923823,17 |
| | ¹ F ₃ | 2120095849,80 | 2169359774,00 | 2219387197,27 | 2610466315,92 | 2322170600,25 |
| 2p6s | ³ P ₂ | 2130165225,37 | 2180051931,01 | 2230720681,41 | 2610466315,92 | 2334441421,51 |
| | ¹ P ₁ | 2130169326,81 | 2180056029,47 | 2230724776,84 | 2610466315,92 | 2334445510,92 |
| 2p6d | ³ P ₀ | 2131003188,49 | 2180918656,27 | 2231616982,02 | 2610466315,92 | 2335399407,08 |
| | ³ P ₁ | 2131270312,81 | 2181194460,78 | 2231901637,58 | 2610466315,92 | 2335702279,00 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 2p7s | ³ P ₀ ² | 2138505823,04 | 2188570518,35 | 2239419243,23 | 2610466315,92 | 2343505892,38 |
| | ¹ P ₀ ¹ | 2138508004,23 | 2188572693,81 | 2239421412,98 | 2610466315,92 | 2343508050,92 |
| 2p8s | ³ P ₀ ² | 2143863797,06 | 2194042059,42 | 2245005595,52 | 2610466315,92 | 2349325602,40 |
| | ¹ P ₀ ¹ | 2143865032,00 | 2194043288,83 | 2245006819,51 | 2610466315,92 | 2349326815,72 |
| 2p9s | ³ P ₀ ² | 2147520019,98 | 2197775870,35 | 2248817858,49 | 2610466315,92 | 2353297367,14 |
| | ¹ P ₀ ¹ | 2147520740,91 | 2197776586,78 | 2248818570,49 | 2610466315,92 | 2353298070,67 |
| 3s3p | ³ P ₀ ⁰ | 2176039852,75 | 2226653109,84 | 2278051305,53 | 2610466315,92 | 2383239843,29 |
| | ³ P ₀ ¹ | 2176240860,71 | 2226856425,29 | 2278256921,67 | 2610466315,92 | 2383450040,27 |
| | ³ P ₀ ² | 2184944597,86 | 2235884428,61 | 2287616647,69 | 2610466315,92 | 2393495682,67 |
| | ¹ P ₀ ¹ | 2185393804,69 | 2236338336,27 | 2288075266,78 | 2610466315,92 | 2393963755,42 |
| 3s4p | ³ P ₀ ⁰ | 2235077160,01 | 2287015257,31 | 2339756015,48 | 2610466315,92 | 2447683228,29 |
| | ³ P ₀ ¹ | 2235098540,87 | 2287036983,65 | 2339778091,59 | 2610466315,92 | 2447706017,06 |
| | ³ P ₀ ² | 2238067188,15 | 2290102208,83 | 2342941479,28 | 2610466315,92 | 2451070411,60 |
| | ¹ P ₀ ¹ | 2238108888,11 | 2290144515,36 | 2342984399,08 | 2610466315,92 | 2451114578,57 |
| 3d4p | ³ P ₀ ¹ | 2242763626,92 | 2294911595,45 | 2347863134,23 | 2610466315,92 | 2456213856,55 |
| | ³ P ₀ ⁰ | 2244823856,85 | 2297057835,75 | 2350097946,03 | 2610466315,92 | 2458633661,42 |
| | ³ P ₀ ² | 2245895940,49 | 2298177994,01 | 2351267982,22 | 2610466315,92 | 2459909101,40 |
| | ¹ P ₀ ¹ | 2248047639,99 | 2300417094,99 | 2353597059,73 | 2610466315,92 | 2462426023,83 |
| 3s5p | ³ P ₀ ⁰ | 2261863375,52 | 2314397627,80 | 2367742095,81 | 2610466315,92 | 2476899479,00 |
| | ³ P ₀ ¹ | 2261869255,82 | 2314403554,48 | 2367748068,47 | 2610466315,92 | 2476905542,42 |
| | ³ P ₀ ² | 2263154949,11 | 2315727408,01 | 2369110552,39 | 2610466315,92 | 2478346653,37 |
| | ¹ P ₀ ¹ | 2263169624,39 | 2315742249,70 | 2369125561,36 | 2610466315,92 | 2478361999,32 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 3d5p | ³ P ₀ ^o | 2269215602,06 | 2321970293,95 | 2375537699,24 | 2610466315,92 | 2485148003,87 |
| | ³ P ₀ | 2270006295,44 | 2322788467,32 | 2376383871,13 | 2610466315,92 | 2486051711,12 |
| | ³ P ₂ | 2272463812,00 | 2325357024,18 | 2379067463,50 | 2610466315,92 | 2488977797,49 |
| | ¹ P ₁ | 2273280209,48 | 2326201058,09 | 2379939647,60 | 2610466315,92 | 2489907805,49 |
| 3s6p | ³ P ₀ | 2276044672,73 | 2328887951,08 | 2382545124,08 | 2610466315,92 | 2492338979,73 |
| | ³ P ₁ | 2276047192,81 | 2328890484,87 | 2382547671,62 | 2610466315,92 | 2492341555,27 |
| | ³ P ₂ | 2276692483,42 | 2329553414,31 | 2383228397,28 | 2610466315,92 | 2493058320,88 |
| | ¹ P ₁ | 2276699521,32 | 2329560518,19 | 2383235567,24 | 2610466315,92 | 2493065623,36 |
| 3d6p | ³ P ₁ | 2283175135,65 | 2337026226,76 | 2390113662,20 | 2610466315,92 | 2500355862,63 |
| | ³ P ₀ | 2283560435,38 | 2336633497,38 | 2390523291,65 | 2610466315,92 | 2500790478,17 |
| 3s7p | ³ P ₀ | 2284449949,47 | 2337473934,21 | 2391313881,38 | 2610466315,92 | 2501479498,45 |
| | ³ P ₁ | 2284451093,07 | 2337475079,05 | 2391315026,67 | 2610466315,92 | 2501480641,91 |
| | ³ P ₂ | 2284807531,29 | 2337840508,62 | 2391689500,99 | 2610466315,92 | 2501873353,14 |
| | ¹ P ₁ | 2284811421,20 | 2337844427,80 | 2391693449,57 | 2610466315,92 | 2501877360,69 |
| 3d6p | ³ P ₂ | 286467126,88 | 2339668176,91 | 2393690345,12 | 2610466315,92 | 2504235873,85 |
| | ¹ P ₁ | 2286863311,41 | 2340076453,90 | 2394110879,23 | 2610466315,92 | 2504681400,46 |
| 3s8p | ³ P ₀ | 2289840433,62 | 2342979310,84 | 2396935431,93 | 2610466315,92 | 2507337244,10 |
| | ³ P ₁ | 2289841132,43 | 2342980011,56 | 2396936134,73 | 2610466315,92 | 2507337951,62 |
| | ³ P ₂ | 2290049374,70 | 2343193044,20 | 2397153972,45 | 2610466315,92 | 2507565437,51 |
| | ¹ P ₁ | 2290051599,47 | 2343195282,69 | 2397156224,37 | 2610466315,92 | 2507567715,57 |
| 3d7p | ³ P ₁ | 2291469590,31 | 2344709537,04 | 2398768165,71 | 2610466315,92 | 2509378905,94 |
| | ³ P ₀ | 2291680230,06 | 2344926207,66 | 2398990926,20 | 2610466315,92 | 2509614012,31 |

Tablo 3.2. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 4s4p | ³ P ₀ | 2292644698,49 | 2345816277,37 | 2399803580,98 | 2610466315,92 | 2510262836,33 |
| | ³ P ₁ | 2292758829,22 | 2345932001,69 | 2399920893,27 | 2610466315,92 | 2510383306,95 |
| 3s9p | ³ P ₀ | 2293556954,25 | 2347961262,33 | 2400813424,98 | 2610466315,92 | 2511380479,69 |
| | ³ P ₁ | 2293557303,85 | 2347961612,05 | 2400813774,67 | 2610466315,92 | 2511380829,07 |
| | ³ P ₂ | 2293680597,79 | 2346902208,48 | 2400942001,17 | 2610466315,92 | 2511513975,42 |
| | ¹ P ₁ | 2293682016,46 | 2346903631,29 | 2400943428,17 | 2610466315,92 | 2511515410,73 |
| 3d7p | ³ P ₂ | 2294782343,53 | 2348163048,13 | 2402367001,62 | 2610466315,92 | 2513282513,18 |
| | ¹ P ₁ | 2294998158,06 | 2348384832,43 | 2402594805,13 | 2610466315,92 | 2513522485,96 |
| 3d8p | ³ P ₁ | 2296800878,72 | 2350154798,13 | 2404328710,15 | 2610466315,92 | 2515173963,59 |
| | ³ P ₀ | 2296923622,35 | 2350280684,23 | 2404457749,79 | 2610466315,92 | 2515309331,47 |
| 4s4p | ³ P ₂ | 2297067750,68 | 2350416278,15 | 2404585398,32 | 2610466315,92 | 2515423122,34 |
| | ¹ P ₁ | 2297248036,82 | 2350593482,57 | 2404758495,00 | 2610466315,92 | 2515583971,60 |
| 4p4d | ³ P ₁ | 2297691966,73 | 2351025891,38 | 2405179247,45 | 2610466315,92 | 2515982583,96 |
| | ³ P ₂ | 2298628347,07 | 2351999938,04 | 2406191196,86 | 2610466315,92 | 2517070169,17 |
| | ³ P ₀ | 2299660889,75 | 2353077020,17 | 2407314213,49 | 2610466315,92 | 2518289336,68 |
| 3d8p | ³ P ₂ | 2300124906,41 | 2353619887,72 | 2407939427,95 | 2610466315,92 | 2519090050,92 |
| | ¹ P ₁ | 2300245892,24 | 2353740761,90 | 2408053683,76 | 2610466315,92 | 2519107475,13 |
| 3d9p | ³ P ₁ | 2300436386,38 | 2353870750,93 | 2408132488,13 | 2610466315,92 | 2519198119,45 |
| | ³ P ₀ | 2300504696,72 | 2353937408,76 | 2408190975,54 | 2610466315,92 | 2519239591,42 |
| 4p4d | ³ P ₁ | 2300934778,29 | 2354397077,73 | 2408681721,55 | 2610466315,92 | 2519755672,80 |
| 3d9p | ³ P ₂ | 2303762562,57 | 2357334982,32 | 2411732831,97 | 2610466315,92 | 2523042691,10 |
| | ¹ P ₁ | 2303837769,39 | 2357411840,56 | 2411811345,88 | 2610466315,92 | 2523124526,50 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 4p5s | ³ P ₀ | 2319303634,73 | 2373054520,62 | 2427627923,90 | 2610466315,92 | 2539279771,57 |
| | ³ P ₁ | 2319315530,50 | 2373066536,94 | 2427640061,18 | 2610466315,92 | 2539292151,67 |
| 4s5p | ³ P ₁ | 2321035527,14 | 2374885876,58 | 2429563127,90 | 2610466315,92 | 2541436324,80 |
| | ³ P ₀ | 2321040049,23 | 2374890344,65 | 2429567560,82 | 2610466315,92 | 2541440747,81 |
| | ³ P ₂ | 2322581968,34 | 2376481864,15 | 2431209251,26 | 2610466315,92 | 2543162900,08 |
| | ¹ P ₁ | 2322613914,68 | 2376509390,35 | 2431228209,36 | 2610466315,92 | 2543184242,35 |
| 4p5d | ¹ P ₁ | 2322751413,29 | 2376626095,50 | 2431330173,63 | 2610466315,92 | 2543274960,21 |
| | ³ P ₂ | 2323222469,69 | 2377109519,94 | 2431822181,60 | 2610466315,92 | 2543762075,12 |
| 4p5s | ³ P ₂ | 2323773066,25 | 2377702484,83 | 2432459431,10 | 2610466315,92 | 2544493639,73 |
| | ¹ P ₁ | 2323802572,01 | 2378719971,74 | 2432489605,36 | 2610466315,92 | 2544524418,20 |
| 4d5p | ³ P ₁ | 2324264174,44 | 2378203566,97 | 2432970626,74 | 2610466315,92 | 2545025549,13 |
| 4p5d | ³ P ₀ | 2324954886,26 | 2378914797,99 | 2433702464,64 | 2610466315,92 | 2545798760,63 |
| 4d5p | ³ P ₀ | 2325052380,19 | 2379019760,08 | 2433815335,49 | 2610466315,92 | 2545928858,02 |
| | ³ P ₂ | 2325430073,99 | 2379416235,77 | 2434231386,31 | 2610466315,92 | 2546365921,17 |
| 4p5d | ³ P ₁ | 2325450433,20 | 2379427674,17 | 2434233051,29 | 2610466315,92 | 2546386537,84 |
| 4d5p | ¹ P ₁ | 2326269345,63 | 2380283513,92 | 2435127208,24 | 2610466315,92 | 2547341040,78 |
| 4p6s | ³ P ₀ | 2333394324,57 | 2387447798,14 | 2442327241,66 | 2610466315,92 | 2554601538,69 |
| | ³ P ₁ | 2333398678,62 | 2387452178,59 | 2442331648,63 | 2610466315,92 | 2554605998,97 |
| 4s6p | ³ P ₀ | 2335498455,12 | 2389669622,97 | 2444671766,60 | 2610466315,92 | 2557207014,99 |
| | ³ P ₁ | 2335499227,69 | 2389670489,89 | 2444672724,61 | 2610466315,92 | 2557208146,12 |
| | ³ P ₂ | 2336246353,49 | 2390439561,31 | 2445463988,57 | 2610466315,92 | 2558044504,73 |
| | ¹ P ₁ | 2336257904,70 | 2391833840,86 | 2445475612,64 | 2610466315,92 | 2558056206,28 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 4p6s | ³ P ₀ ² | 2337864426,10 | 2392096943,76 | 2447160420,67 | 2610466315,92 | 2559818010,30 |
| | ¹ P ₀ ¹ | 2337874254,10 | 2392106816,77 | 2447170338,59 | 2610466315,92 | 2559828017,81 |
| 4d6p | ³ P ₀ ¹ | 2338260709,55 | 2392507250,64 | 2447585312,48 | 2610466315,92 | 2560273862,14 |
| | ³ P ₀ ⁰ | 2338643829,67 | 2392902546,85 | 2447992957,16 | 2610466315,92 | 2560706706,56 |
| | ³ P ₀ ² | 2339462289,74 | 2393756624,88 | 2448883832,52 | 2610466315,92 | 2561674813,07 |
| | ¹ P ₀ ¹ | 2339861584,52 | 2394168181,08 | 2449307822,05 | 2610466315,92 | 2562124170,60 |
| 4p7s | ³ P ₀ ⁰ | 2341757407,77 | 2395988821,31 | 2451048185,50 | 2610466315,92 | 2563688270,99 |
| | ³ P ₀ ¹ | 2341759435,69 | 2395990859,66 | 2451050234,10 | 2610466315,92 | 2563690339,52 |
| 4s7p | ³ P ₀ ⁰ | 2343994387,70 | 2398349907,83 | 2453538569,81 | 2610466315,92 | 2566453364,77 |
| | ³ P ₀ ¹ | 2343995044,74 | 2398350604,09 | 2453539303,94 | 2610466315,92 | 2566454170,57 |
| | ³ P ₀ ² | 2344397104,35 | 2398763487,99 | 2453963097,08 | 2610466315,92 | 2566900020,36 |
| | ¹ P ₀ ¹ | 2344402778,61 | 2398769171,06 | 2453968789,47 | 2610466315,92 | 2566905732,68 |
| 4p7s | ³ P ₀ ² | 2346229232,25 | 2400639740,59 | 2455883188,63 | 2610466315,92 | 2568906667,16 |
| | ¹ P ₀ ¹ | 2346233554,13 | 2400644080,05 | 2455887545,53 | 2610466315,92 | 2568911058,31 |
| 4d7p | ³ P ₀ ¹ | 2346568621,21 | 2400994129,05 | 2456253171,37 | 2610466315,92 | 2569309165,24 |
| | ³ P ₀ ⁰ | 2346776785,21 | 2401208029,29 | 2456472376,29 | 2610466315,92 | 2569504511,95 |
| 4p8s | ³ P ₀ ⁰ | 2347127462,30 | 2401472971,09 | 2456647707,82 | 2610466315,92 | 2569522638,24 |
| | ³ P ₀ ¹ | 2347128036,54 | 2401473225,96 | 2456648268,93 | 2610466315,92 | 2569559484,16 |
| 5s5p | ³ P ₀ ⁰ | 2347601516,98 | 2402031542,47 | 2457295398,85 | 2610466315,92 | 2570362635,56 |
| | ³ P ₀ ¹ | 2347667877,22 | 2402888998,70 | 2457363729,09 | 2610466315,92 | 2570432927,41 |
| 4d7p | ³ P ₀ ² | 2347787241,53 | 2402261315,65 | 2457570389,28 | 2610466315,92 | 2570731503,13 |
| | ¹ P ₀ ¹ | 2348003362,29 | 2402483529,06 | 2457798759,16 | 2610466315,92 | 2570972368,15 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|---|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 5s5p | ³ P ₀ ^o | 349176354,09 | 2403657695,42 | 2458973678,89 | 2610466315,92 | 2572147554,58 |
| | ¹ P ₁ ^o | 2349303378,21 | 2403785988,35 | 2459103210,05 | 2610466315,92 | 2572279462,17 |
| 4s8p | ³ P ₀ ^o | 2349424703,55 | 2403896614,37 | 2459202986,42 | 2610466315,92 | 2572357163,96 |
| | ³ P ₁ ^o | 2349425200,64 | 2403897133,67 | 2459203527,16 | 2610466315,92 | 2572357746,62 |
| | ³ P ₂ ^o | 2349656035,27 | 2404133620,07 | 2459445690,96 | 2610466315,92 | 2572611331,99 |
| | ³ P ¹ P ₁ ^o | 2349658484,19 | 2404136199,45 | 2459448362,41 | 2610466315,92 | 2572614120,31 |
| 5p5d | ³ P ₁ ^o | 2349698457,81 | 2404183753,56 | 2459503470,19 | 2610466315,92 | 2572684075,90 |
| | ³ P ₂ ^o | 350059571,35 | 2404560675,49 | 2459896532,93 | 2610466315,92 | 2573110469,28 |
| | ³ P ₀ ^o | 2350399734,56 | 2404912080,99 | 2460259329,38 | 2610466315,92 | 2573496467,33 |
| 4p9s | ³ P ₀ ^o | 2350854560,90 | 2405280858,74 | 2460537371,92 | 2610466315,92 | 2573578576,84 |
| | ³ P ₁ ^o | 2350854685,38 | 2405281018,93 | 2460537558,28 | 2610466315,92 | 2573578812,80 |
| 5p5d | ¹ P ₁ ^o | 2350989005,88 | 2405519551,67 | 2460885422,11 | 2610466315,92 | 2574161057,69 |
| 4p8s | ³ P ₂ ^o | 2351598733,99 | 2406122796,22 | 2461481040,74 | 2610466315,92 | 2574737842,49 |
| | ¹ P ₁ ^o | 2351601065,72 | 2406125132,64 | 2461483381,90 | 2610466315,92 | 2574740193,38 |
| 4d8p | ³ P ₁ ^o | 2351907902,65 | 2406447574,93 | 2461822188,69 | 2610466315,92 | 2575114130,87 |
| | ³ P ₀ ^o | 2352029140,40 | 2406572034,59 | 2461949892,02 | 2610466315,92 | 2575248382,47 |
| | ³ P ₂ ^o | 2353134135,88 | 2407701081,99 | 2463088639,22 | 2610466315,92 | 2576407965,18 |
| 4s9p | ³ P ₀ ^o | 2353148910,69 | 2407701824,08 | 2463089441,11 | 2610466315,92 | 2576408841,92 |
| | ³ P ₁ ^o | 2353149558,28 | 2407722445,18 | 2463147003,61 | 2610466315,92 | 2576540990,32 |
| 4d8p | ¹ P ₁ ^o | 2353259548,57 | 2407838380,24 | 2463229142,74 | 2610466315,92 | 2576554889,43 |
| 4s9p | ³ P ₂ ^o | 2353283537,98 | 2407838618,56 | 2463229711,51 | 2610466315,92 | 2576556424,70 |
| | ¹ P ₁ ^o | 2353285374,15 | 2407853048,89 | 2463279973,29 | 2610466315,92 | 2576682515,08 |

Tablo 3.2. (Devami)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|--|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 4p9s | ³ P ₀ ² | 2355267032,51 | 2409869052,33 | 2465306138,26 | 2610466315,92 | 2578723283,79 |
| | ¹ P ₀ ¹ | 2355268940,45 | 2409870985,27 | 2465308097,12 | 2610466315,92 | 2578725297,30 |
| 4d9p | ³ P ₀ ¹ | 2355542096,82 | 2410159034,79 | 2465611778,97 | 2610466315,92 | 2579062582,73 |
| | ³ P ₀ ⁰ | 2355613654,80 | 2410232244,80 | 2465686645,54 | 2610466315,92 | 2579140773,38 |
| | ³ P ₀ ² | 2356774727,64 | 2411440537,82 | 2466943525,55 | 2610466315,92 | 2580499013,90 |
| | ¹ P ₀ ¹ | 2356848759,74 | 2411516224,21 | 2467020871,09 | 2610466315,92 | 2580579689,71 |
| 5p6s | ³ P ₀ ⁰ | 2361826647,28 | 2416561404,98 | 2472133447,37 | 2610466315,92 | 2585827433,46 |
| | ³ P ₀ ¹ | 2361837096,68 | 2416571842,66 | 2472143876,14 | 2610466315,92 | 2585837852,66 |
| 5s6p | ³ P ₀ ¹ | 2362217380,88 | 2416970323,67 | 2472561161,25 | 2610466315,92 | 2586294597,32 |
| | ³ P ₀ ⁰ | 2362223951,70 | 2416976633,14 | 2472567216,37 | 2610466315,92 | 2586300164,29 |
| | ³ P ₀ ² | 2362955693,18 | 2417730480,07 | 2473343412,95 | 2610466315,92 | 2587121762,78 |
| | ¹ P ₀ ¹ | 362974125,74 | 2417749060,67 | 2473362141,02 | 2610466315,92 | 2587140784,15 |
| 5p6s | ³ P ₀ ² | 2363417416,52 | 2418203528,63 | 2473827749,07 | 2610466315,92 | 2587628510,69 |
| | ¹ P ₀ ¹ | 2363439044,88 | 2418225259,46 | 2473849582,53 | 2610466315,92 | 2587650550,04 |
| 5d6p | ³ P ₀ ¹ | 2363737199,67 | 2418530025,28 | 2474161083,02 | 2610466315,92 | 2587975909,15 |
| | ³ P ₀ ⁰ | 2364109729,73 | 2418914860,58 | 2474558400,41 | 2610466315,92 | 2588398706,91 |
| | ³ P ₀ ² | 2364222608,27 | 2419033201,92 | 2474682438,14 | 2610466315,92 | 2588534863,02 |
| | ¹ P ₀ ¹ | 2364631581,59 | 2419454745,24 | 2475116731,82 | 2610466315,92 | 2588995183,76 |
| 5p7s | ³ P ₀ ⁰ | 2370219922,31 | 2425132878,60 | 2480885101,75 | 2610466315,92 | 2594945401,41 |
| | ³ P ₀ ¹ | 2370223644,06 | 2425136577,89 | 2480888780,45 | 2610466315,92 | 2594949044,27 |
| 5s7p | ³ P ₀ ¹ | 2370736444,39 | 2425673905,06 | 2481451431,33 | 2610466315,92 | 2595564768,90 |
| | ³ P ₀ ⁰ | 2370740398,74 | 2425677733,27 | 2481455138,08 | 2610466315,92 | 2595568246,22 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 5s7p | ³ P ₀ ² | 2371133257,41 | 2426081505,07 | 2481869905,89 | 2610466315,92 | 2596005238,63 |
| | ¹ P ₀ ¹ | 2371143697,75 | 2426091953,64 | 2481880364,05 | 2610466315,92 | 2596015719,99 |
| 5p7s | ³ P ₀ ² | 2371808213,44 | 2426772567,08 | 2482577008,10 | 2610466315,92 | 2596744153,32 |
| | ¹ P ₀ ¹ | 2371815132,17 | 2426779506,81 | 2482583968,75 | 2610466315,92 | 2596751155,56 |
| 5d7p | ³ P ₀ ¹ | 2372058967,01 | 2427031295,45 | 2482843972,96 | 2610466315,92 | 2597028409,62 |
| | ³ P ₀ ⁰ | 2372264483,40 | 2427242927,60 | 2483061786,54 | 2610466315,92 | 2597258774,15 |
| | ³ P ₀ ² | 2372563764,97 | 2427554288,00 | 2483385580,27 | 2610466315,92 | 2597608517,46 |
| | ¹ P ₀ ¹ | 2372781776,87 | 2427778500,46 | 2483616059,15 | 2610466315,92 | 2597851717,98 |
| 5p8s | ³ P ₀ ⁰ | 2375602200,99 | 2431418873,64 | 2486495837,73 | 2610466315,92 | 2600789575,54 |
| | ³ P ₀ ¹ | 2375603678,04 | 2431420344,58 | 2486497303,23 | 2610466315,92 | 2600791031,91 |
| 5s8p | ³ P ₀ ¹ | 2376176400,47 | 2431230307,13 | 2487125600,10 | 2610466315,92 | 2601478437,73 |
| | ³ P ₀ ⁰ | 2376178106,31 | 2431231954,18 | 2487127190,88 | 2610466315,92 | 2601479923,00 |
| 6s6p | ³ P ₀ ⁰ | 2376336458,71 | 2431392624,10 | 2487290150,06 | 2610466315,92 | 2601647373,45 |
| | ³ P ₀ ¹ | 2376385929,14 | 2431442797,11 | 2487341020,17 | 2610466315,92 | 2601699624,81 |
| 5s8p | ³ P ₀ ² | 2376403955,61 | 2431463505,28 | 2487364468,94 | 2610466315,92 | 2601728721,95 |
| | ¹ P ₀ ¹ | 2376409585,52 | 2431469099,31 | 2487370031,98 | 2610466315,92 | 2601734234,32 |
| 6s6p | ³ P ₀ ² | 2377084148,45 | 2433544949,82 | 2488081976,77 | 2610466315,92 | 2602484306,64 |
| 5p8s | ¹ P ₀ ¹ | 2377184870,58 | 2432263097,63 | 2488182695,14 | 2610466315,92 | 2602583969,14 |
| | ³ P ₀ ² | 2377189187,78 | 2432267161,65 | 2488186465,57 | 2610466315,92 | 2602587067,62 |
| 6s6p | ¹ P ₀ ¹ | 2377215301,90 | 2432294405,59 | 2488215083,07 | 2610466315,92 | 2602619254,84 |
| 5d8p | ³ P ₀ ¹ | 2377403351,00 | 2432489780,57 | 2488417860,87 | 2610466315,92 | 2602837016,31 |
| | ³ P ₀ ⁰ | 2377522646,82 | 2432612308,21 | 2488543643,70 | 2610466315,92 | 2602969374,59 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 5d8p | ³ P ₀ ² | 2377915491,97 | 2433020383,02 | 2488967349,32 | 2610466315,92 | 2603425561,02 |
| | ¹ P ₀ ¹ | 2378040961,74 | 2433149106,27 | 2489099349,75 | 2610466315,92 | 2603564181,65 |
| 5p9s | ³ P ₀ ¹ | 2379308393,50 | 2434414153,41 | 2490361329,88 | 2610466315,92 | 2604817991,65 |
| | ³ P ₀ ⁰ | 379309647,10 | 2434415420,33 | 2490362609,82 | 2610466315,92 | 2604819296,89 |
| 5s9p | ³ P ₀ ⁰ | 2379899486,66 | 2435033340,25 | 2491009495,46 | 2610466315,92 | 2605526806,57 |
| | ³ P ₀ ¹ | 2379901048,62 | 2435034945,98 | 2491011143,74 | 2610466315,92 | 2605528536,36 |
| | ³ P ₀ ² | 2380031726,85 | 2435168411,47 | 2491147395,95 | 2610466315,92 | 2605670355,67 |
| | ¹ P ₀ ¹ | 2380033243,18 | 2435169858,46 | 2491148772,60 | 2610466315,92 | 2605671588,13 |
| 5p9s | ³ P ₀ ² | 2380861014,56 | 2436016795,52 | 2492014776,57 | 2610466315,92 | 2606575348,65 |
| | ¹ P ₀ ¹ | 2380864241,02 | 2436020085,30 | 2492018131,62 | 2610466315,92 | 2606578840,56 |
| 5d9p | ³ P ₀ ¹ | 2381041416,45 | 2436205137,49 | 2492211376,16 | 2610466315,92 | 2606789453,07 |
| | ³ P ₀ ⁰ | 2381111593,43 | 2436276970,54 | 2492284870,50 | 2610466315,92 | 2606866283,21 |
| | ³ P ₀ ² | 2381558158,95 | 2436740509,46 | 2492765804,81 | 2610466315,92 | 2607383287,30 |
| | ¹ P ₀ ¹ | 2381631533,54 | 2436815545,27 | 2492842507,07 | 2610466315,92 | 2607463335,54 |
| 6p7s | ³ P ₀ ⁰ | 2384802394,90 | 2440038111,90 | 2496117166,95 | 2610466315,92 | 2610843385,96 |
| | ³ P ₀ ¹ | 2384815655,31 | 2440051282,55 | 2496130249,70 | 2610466315,92 | 2610856299,08 |
| 6s7p | ³ P ₀ ¹ | 2384955698,10 | 2440197669,74 | 2496283171,48 | 2610466315,92 | 2611022866,80 |
| | ³ P ₀ ⁰ | 2384969488,54 | 2440211183,52 | 2496296414,53 | 2610466315,92 | 2611035586,34 |
| | ³ P ₀ ² | 2385345003,14 | 2440597648,86 | 2496693912,09 | 2610466315,92 | 2611455375,93 |
| | ¹ P ₀ ¹ | 2385364305,04 | 2440617053,77 | 2496713421,11 | 2610466315,92 | 2611475096,44 |
| 6p7s | ³ P ₀ ² | 2385574362,17 | 2440831868,59 | 2496932971,64 | 2610466315,92 | 2611704032,59 |
| | ¹ P ₀ ¹ | 2385592521,14 | 2440850061,20 | 2496951199,71 | 2610466315,92 | 2611722336,76 |

Tablo 3.2. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 6p8s | ³ P ₀ | 2390202127,39 | 2446736780,34 | 2501745682,51 | 2610466315,92 | 2616705652,91 |
| | ³ P ₁ | 2390206906,24 | 2445556317,46 | 2501750310,89 | 2610466315,92 | 2616710142,31 |
| 6s8p | ³ P ₁ | 2390410184,55 | 2446756350,97 | 2501972093,38 | 2610466315,92 | 2616951512,31 |
| | ³ P ₀ | 2390418134,77 | 2445776497,33 | 2501979716,74 | 2610466315,92 | 2616958831,59 |
| | ³ P ₂ | 2390633055,23 | 2445997190,11 | 2502206203,85 | 2610466315,92 | 2617196965,06 |
| | ¹ P ₁ | 2390644650,90 | 2446008767,77 | 2502217765,69 | 2610466315,92 | 2617208501,58 |
| 6p8s | ³ P ₂ | 2390963204,67 | 2446334504,22 | 2502550640,70 | 2610466315,92 | 2617555491,80 |
| | ¹ P ₁ | 2390967855,34 | 2446339168,83 | 2502555319,27 | 2610466315,92 | 2617560198,49 |
| 7s7p | ³ P ₀ | 2393341177,66 | 2448761403,09 | 2505027141,82 | 2610466315,92 | 2620133265,99 |
| | ³ P ₁ | 2393375513,61 | 2448796221,81 | 2505062441,94 | 2610466315,92 | 2620169525,00 |
| | ³ P ₂ | 2393739627,77 | 2449170615,43 | 2505447204,41 | 2610466315,92 | 2620575276,86 |
| | ¹ P ₁ | 2393831660,11 | 2449263538,14 | 2505541018,61 | 2610466315,92 | 2620670875,67 |
| 6p9s | ³ P ₁ | 2393909812,17 | 2449337953,20 | 2505611559,01 | 2610466315,92 | 2620733267,38 |
| | ³ P ₀ | 2393913701,14 | 2449341907,66 | 2505615575,41 | 2610466315,92 | 2620737396,06 |
| 6s9p | ³ P ₀ | 2394137760,93 | 2449576135,88 | 2505860276,34 | 2610466315,92 | 2621003961,97 |
| | ³ P ₁ | 2394140121,71 | 2449578632,41 | 2505862904,70 | 2610466315,92 | 2621006843,10 |
| | ³ P ₂ | 2394268012,01 | 2451091924,74 | 2505996210,64 | 2610466315,92 | 2621145545,84 |
| | ¹ P ₁ | 2394270331,64 | 2451094062,55 | 2505998163,57 | 2610466315,92 | 2621147118,95 |
| | ³ P ₂ | 2394636999,22 | 2450086132,99 | 2506380969,56 | 2610466315,92 | 2621545824,08 |
| 6p9s | ¹ P ₁ | 2394643624,31 | 2450092920,08 | 2506387923,71 | 2610466315,92 | 2621553128,05 |
| 7p8s | ³ P ₀ | 2398784626,66 | 2455504752,60 | 2510701306,05 | 2610466315,92 | 2626043123,59 |
| | ² P ₁ | 2398797552,31 | 2455517605,72 | 2510714083,95 | 2610466315,92 | 2626055744,50 |

Tablo 3.2. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|--|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 7s8p | ³ P ₀ ¹ | 2398863266,90 | 2454400943,21 | 2510785452,13 | 2610466315,92 | 2626133079,29 |
| | ² P ₀ ⁰ | 2398880898,25 | 2454418374,40 | 2510802684,06 | 2610466315,92 | 2626149916,29 |
| | ² P ₂ ⁰ | 2399079920,66 | 2454623108,34 | 2511013156,65 | 2610466315,92 | 2626371937,53 |
| | ¹ P ₁ ⁰ | 2399097309,80 | 2454640579,14 | 2511030709,80 | 2610466315,92 | 2626389657,35 |
| 7p8s | ³ P ₂ ⁰ | 2399209105,84 | 2455544814,87 | 2511147150,97 | 2610466315,92 | 2626510677,46 |
| | ¹ P ₁ ⁰ | 2399222967,60 | 2455558685,82 | 2511161033,05 | 2610466315,92 | 2626524587,44 |
| 7p9s | ³ P ₁ ⁰ | 2402504419,04 | 2458117803,19 | 2514578808,98 | 2610466315,92 | 2630081797,42 |
| | ³ P ₀ ⁰ | 2402514673,29 | 2458128333,18 | 2514589606,22 | 2610466315,92 | 2630093105,71 |
| 7s9p | ³ P ₀ ⁰ | 2402603004,16 | 2458220630,63 | 2514686016,72 | 2610466315,92 | 2630198179,72 |
| | ³ P ₁ ⁰ | 2402607869,05 | 2458225846,52 | 2514691572,66 | 2610466315,92 | 2630204385,20 |
| | ³ P ₂ ⁰ | 2402731114,57 | 2458351605,32 | 2514819554,42 | 2610466315,92 | 2630336389,51 |
| | ¹ P ₁ ⁰ | 2402731730,55 | 2458351779,40 | 2514819832,23 | 2610466315,92 | 2630337602,55 |
| 7p9s | ³ P ₂ ⁰ | 2402889312,88 | 2458512812,69 | 2514984027,23 | 2610466315,92 | 2630507699,30 |
| | ¹ P ₁ ⁰ | 2402904283,51 | 2458528224,22 | 2514999891,98 | 2610466315,92 | 2630524508,67 |
| 8s8p | ³ P ₀ ⁰ | 2404248487,14 | 2459899892,71 | 2516399375,98 | 2610466315,92 | 2631980689,52 |
| | ³ P ₁ ⁰ | 2404272987,26 | 2459924745,30 | 2516424579,90 | 2610466315,92 | 2632006592,88 |
| | ³ P ₂ ⁰ | 2404473234,32 | 2460130210,66 | 2516635292,80 | 2610466315,92 | 2632227879,65 |
| | ¹ P ₁ ⁰ | 2404545632,15 | 2460203296,56 | 2516709068,66 | 2610466315,92 | 2632303040,88 |
| 8p9s | ³ P ₁ ⁰ | 2407989661,30 | 2463719667,26 | 2520298600,11 | 2610466315,92 | 2636041362,09 |
| | ³ P ₀ ⁰ | 2408015848,12 | 2463746155,90 | 2520325382,05 | 2610466315,92 | 2636068710,60 |
| 8s9p | ³ P ₀ ⁰ | 2408052541,33 | 2463785678,10 | 2520367844,12 | 2610466315,92 | 2636117375,34 |
| | ³ P ₁ ⁰ | 2408069857,51 | 2463803357,89 | 2520385876,14 | 2610466315,92 | 2636136083,70 |

Tablo 3.2. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|---------------|
| 8s9p | ¹ P ₀ | 2408153841,53 | 2463887792,38 | 2520470694,80 | 2610466315,92 | 2636221463,10 |
| | ³ P ₀ | 2408173152,76 | 2463908200,79 | 2520492198,33 | 2610466315,92 | 2636245143,33 |
| 8p9s | ³ P ₀ | 2408218112,04 | 2463953940,25 | 2520538788,22 | 2610466315,92 | 2636293663,39 |
| | ¹ P ₀ | 2408265829,99 | 2464002847,87 | 2520588885,80 | 2610466315,92 | 2636346134,47 |

3.2. Helyum Benzeri Ac, Th, Pa, U ve Np'nin Elektrik Dipol Geçiřleri

Seviye yapılarının incelenmesinden sonra $nsns'$ ($n=1-5$, $n'=1-9$, $5s9s$ hariç), $1snd$ ($n=3-7$), $npnp'$ ($n=2-4$, $n'=1-9$), $5p6p$, $6p^2$, $2p4f$, $1s5g$, $2s5g$ çift pariteli ve $nsnp'$ ($n=1-9$, $n'=2-9$, $9s9p$ hariç), $2pnd$ ($n=3-6$) $ndnp'$ ($n=3-5$, $n'=4-9$ $n'>n$), $nsn'f$ ($n=1,2$, $n'=4-9$), $2p5g$, $4p4d$, $4p5d$ tek pariteli konfigürasyonlar arasındaki E1, E2, M1 ve M2 geçiřleri de incelenmiřtir. Elde edilen verilerin çokluęu nedeniyle sadece Seviyelerden $1s^2 \ ^1S_0$ taban haline yapılan geçiř verileri sunulmaktadır. Bu geçiřlere ait dalga boyları Tablo 3.3., aęırlıklı salınıcı řiddetleri Tablo 3.4. ve geçiř olasılıkları Tablo 3.5.'de sunulmaktadır.

Yapılan kaynak taramasında Fm^{98+} iyonunun $1s2p \ ^3P_1$, $\ ^1P_1$ ve $1s3p \ ^3P_1 - 1s^2 \ ^1S_0$ geçiřine ait geçiř olasılıęı verisi bulunmaktadır. Dięer geçiřler için herhangi bir teorik veya deneysel karřılařtırma deęeri bulunmamaktadır.

Tablo 3.3. Helyum benzeri Aynştaynyum, Fermiyum, Mendelevyum, Nobelyum, Lavrensiyum'um taban hale yapılan geçişlerinin dalga boyları (Å)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| E1 Geçişleri | | | | | | |
| 1s2p | ³ P ₁ | 0,11 | 0,11 | 0,11 | 0,1 | 0,1 |
| 1s2p | ¹ P ₁ | 0,11 | 0,1 | 0,1 | 0,1 | 0,1 |
| 1s3p | ³ P ₁ | 0,09 | 0,09 | 0,09 | 0,09 | 0,08 |
| 1s3p | ¹ P ₁ | 0,09 | 0,09 | 0,09 | 0,09 | 0,08 |
| 1s4p | ³ P ₁ | 0,09 | 0,09 | 0,08 | 0,08 | 0,08 |
| 1s4p | ¹ P ₁ | 0,09 | 0,09 | 0,08 | 0,08 | 0,08 |
| 1s5p | ³ P ₁ | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s5p | ¹ P ₁ | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s6p | ³ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s6p | ¹ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s7p | ³ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s7p | ¹ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s8p | ³ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s8p | ¹ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s9p | ³ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s9p | ¹ P ₁ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 2s2p | ³ P ₁ | 0,06 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2s2p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3s | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2s3p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2s3p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3d | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3s | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p3d | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p4s | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2s4p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2s4p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p4d | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p5s | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s5p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s5p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p4s | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p6s | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p4d | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s6p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s6p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |

Tablo 3.3. (Devami)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p5d | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p7s | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s7p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s7p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p8s | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p9s | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s8p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s8p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p6d | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s9p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s9p | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p5s | ¹ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p5d | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p6s | ¹ P ₁ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p6d | ³ P ₁ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p7s | ¹ P ₁ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p8s | ¹ P ₁ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p9s | ¹ P ₁ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 3s3p | ³ P ₁ | 0,05 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s3p | ¹ P ₁ | 0,05 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s4p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s4p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3d4p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3d4p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s5p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s5p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3d5p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s6p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s6p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s7p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3d6p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s4p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3d7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |

Tablo 3.3. (Devami)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 4s4p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p4d | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p4d | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p5s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s5p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s5p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p5d | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p5s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d5p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p5d | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d5p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p6s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s6p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s6p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p6s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d6p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d6p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p7s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s7p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p7s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p8s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s5p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s5p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p5d | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p9s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p5d | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p8s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p9s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |

Tablo 3.3. (Devami)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 5p6s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s6p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s6p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p6s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d6p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d6p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p7s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s7p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p7s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d7p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p8s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s6p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p8s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s6p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p9s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p9s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5d9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p7s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s7p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p7s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p8s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p8s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7s7p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7s7p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p9s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |

Tablo 3.3. (Devami)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 6s9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p9s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7p8s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7s8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7s8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7p8s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7p9s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7s9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7s9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7p9s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8s8p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8s8p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8p9s | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8s9p | ³ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8s9p | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8p9s | ¹ P ₁ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| E2 Geçişleri | | | | | | |
| 1s3d | ³ D ₂ | 0,09 | 0,09 | 0,09 | 0,08 | 0,08 |
| 1s3d | ¹ D ₂ | 0,09 | 0,09 | 0,09 | 0,08 | 0,08 |
| 1s4d | ³ D ₂ | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s4d | ¹ D ₂ | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s5d | ³ D ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s5d | ¹ D ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s6d | ³ D ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s6d | ¹ D ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s7d | ³ D ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s7d | ¹ D ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 2p ² | ¹ D ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p ² | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p3p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p4p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p4f | ³ F ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p5p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p4p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p6p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p4p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |

Tablo 3.3. (Devami)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p4f | ³ F ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p4f | ¹ D ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p7p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p8p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p9p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p5p | ³ D ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p5p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p6p | ³ D ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p6p | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p7p | ³ D ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p7p | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p8p | ³ D ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p8p | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p9p | ³ D ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p9p | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 3p ² | ¹ D ₂ | 0,05 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p ² | ³ P ₂ | 0,05 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p4p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p4p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p4p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p5p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p5p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p5p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p6p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p6p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p7p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p6p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p8p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p7p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p7p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p9p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p ² | ¹ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p8p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p8p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p ² | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p9p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3p9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p5p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |

Tablo 3.3. (Devamı)

| Seviyeler | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|-----------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|------|
| 4p5p | ¹ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p5p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p6p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p6p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p6p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p7p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p7p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p7p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p8p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p8p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p8p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p9p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p9p | ³ D ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| M1 Geçişleri | | | | | | |
| 2p ² | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p4p | ³ P ₁ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| M2 Geçişleri | | | | | | |
| 1s2p | ³ P ₂ | 0,11 | 0,1 | 0,1 | 0,1 | 0,1 |
| 1s3p | ³ P ₂ | 0,09 | 0,09 | 0,09 | 0,09 | 0,08 |
| 1s4p | ³ P ₂ | 0,09 | 0,09 | 0,08 | 0,08 | 0,08 |
| 1s5p | ³ P ₂ | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s6p | ³ P ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s7p | ³ P ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s8p | ³ P ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 1s7f | ³ F ₂ | 0,08 | ---- | --- | ---- | ---- |
| 1s9p | ³ P ₂ | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| 2s2p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2s3p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 |
| 2p3s | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 |
| 2p4d | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s5p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p4s | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s6p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p5d | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s7p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s8p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |

Tablo 3.3. (Devami)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p6d | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2s9p | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p5s | ³ P ₂ | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| 2p6s | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p7s | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p8s | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 2p9s | ³ P ₂ | 0,05 | 0,05 | 0,04 | 0,04 | 0,04 |
| 3s3p | ³ P ₂ | 0,05 | --- | --- | --- | --- |
| 3s4p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s6p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s7p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s8p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 3s9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s4p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p5s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s6p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p6s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s7p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p7s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s5p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s8p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p8s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4d8p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4s9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 4p9s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p6s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p7s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s8p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p8s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5s9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 5p9s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p7s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p8s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6s9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 6p9s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7s9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 7p9s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8s9p | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |
| 8p9s | ³ P ₂ | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 |

Tablo 3.4. Helyum benzeri Aynştaynyum, Fermiyum, Mendelevyum, Nobelyum, Lavrensiyum'um taban hale yapılan geçişlerinin salıncı şiddetleri

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| E1 Geçişleri | | | | | | |
| 1s2p | ³ P ₁ | 1,53366(-1) | 1,50961(-1) | 1,48532(-1) | 1,46081(-1) | 1,43610(-1) |
| 1s2p | ¹ P ₁ | 3,14096(-1) | 3,09600(-1) | 3,05093(-1) | 3,00576(-1) | 2,96050(-1) |
| 1s3p | ³ P ₁ | 7,51418(-3) | 7,00466(-3) | 6,50878(-3) | 6,02701(-3) | 5,55986(-3) |
| 1s3p | ¹ P ₁ | 3,75128(-2) | 3,63052(-2) | 3,51032(-2) | 3,39073(-2) | 3,27179(-2) |
| 1s4p | ³ P ₁ | 1,13118(-4) | 6,59842(-5) | 3,13319(-5) | 9,37027(-6) | 2,62703(-7) |
| 1s4p | ¹ P ₁ | 4,75677(-3) | 4,34830(-3) | 3,95390(-3) | 3,57446(-3) | 3,21024(-3) |
| 1s5p | ³ P ₁ | 5,45630(-4) | 6,57834(-4) | 7,81052(-4) | 9,15537(-4) | 1,06134(-3) |
| 1s5p | ¹ P ₁ | 4,01638(-5) | 1,11890(-5) | 1,05910(-7) | 7,42379(-6) | 3,36771(-5) |
| 1s6p | ³ P ₁ | 2,13457(-3) | 2,34620(-3) | 2,56878(-3) | 2,80250(-3) | 3,04750(-3) |
| 1s6p | ¹ P ₁ | 1,30547(-3) | 1,53757(-3) | 1,79076(-3) | 2,06565(-3) | 2,36270(-3) |
| 1s7p | ³ P ₁ | 4,68222(-3) | 5,01004(-3) | 5,35089(-3) | 5,70464(-3) | 6,07140(-3) |
| 1s7p | ¹ P ₁ | 5,70824(-3) | 6,22819(-3) | 6,77560(-3) | 7,35050(-3) | 7,95335(-3) |
| 1s8p | ³ P ₁ | 9,95493(-3) | 1,05043(-2) | 1,10706(-2) | 1,16543(-2) | 1,22564(-2) |
| 1s8p | ¹ P ₁ | 1,64575(-2) | 1,75009(-2) | 1,85826(-2) | 1,97038(-2) | 2,08665(-2) |
| 1s9p | ³ P ₁ | 3,15739(-2) | 3,29737(-2) | 3,44128(-2) | 3,58890(-2) | 3,74041(-2) |
| 1s9p | ¹ P ₁ | 6,59471(-2) | 6,89966(-2) | 7,21351(-2) | 7,53580(-2) | 7,86692(-2) |
| 2s2p | ³ P ₁ | 6,71820(-9) | 1,00533(-8) | 1,41136(-8) | 1,87472(-8) | 2,40757(-8) |
| 2s2p | ¹ P ₁ | 5,69276(-8) | 4,88544(-8) | 4,13618(-8) | 3,47250(-8) | 2,86312(-8) |
| 2p3s | ³ P ₁ | 1,75205(-7) | 1,80430(-7) | 1,85868(-7) | 1,91519(-7) | 1,96852(-7) |
| 2s3p | ³ P ₁ | 1,23778(-7) | 1,29525(-7) | 1,35268(-7) | 1,41192(-7) | 1,46763(-7) |
| 2s3p | ¹ P ₁ | 1,31875(-7) | 1,41868(-7) | 1,51644(-7) | 1,62414(-7) | 1,72504(-7) |
| 2p3d | ¹ P ₁ | 1,19854(-8) | 1,14746(-8) | 1,10463(-8) | 1,06569(-8) | 1,02091(-8) |
| 2p3s | ¹ P ₁ | 7,99327(-8) | 8,19816(-8) | 8,41435(-8) | 8,64206(-8) | 8,84341(-8) |
| 2p3d | ³ P ₁ | 5,25566(-9) | 4,91839(-9) | 4,64456(-9) | 4,40208(-9) | 4,11566(-9) |
| 2p4s | ³ P ₁ | 4,34303(-7) | 4,44470(-7) | 4,54924(-7) | 4,64561(-7) | 4,76521(-7) |
| 2s4p | ³ P ₁ | 5,29930(-8) | 5,33000(-8) | 5,41506(-8) | 5,41335(-8) | 5,48859(-8) |
| 2s4p | ¹ P ₁ | 7,02180(-8) | 7,12115(-8) | 7,29115(-8) | 7,32439(-8) | 7,49008(-8) |
| 2p4d | ¹ P ₁ | 2,33686(-8) | 2,28982(-8) | 2,21162(-8) | 2,13761(-8) | 2,10575(-8) |
| 2p5s | ³ P ₁ | 3,44863(-7) | 3,49444(-7) | 3,53009(-7) | 3,56785(-7) | 3,58914(-7) |
| 2s5p | ³ P ₁ | 1,04537(-7) | 1,06109(-7) | 1,05831(-7) | 1,07316(-7) | 1,07240(-7) |
| 2s5p | ¹ P ₁ | 1,39204(-7) | 1,41645(-7) | 1,40949(-7) | 1,42987(-7) | 1,42942(-7) |
| 2p4s | ¹ P ₁ | 1,80633(-7) | 1,81176(-7) | 1,80438(-7) | 1,79226(-7) | 1,67965(-7) |
| 2p6s | ³ P ₁ | 3,49766(-7) | 3,50859(-7) | 3,54234(-7) | 3,55826(-7) | 3,71132(-7) |
| 2p4d | ³ P ₁ | 7,84344(-9) | 6,64303(-9) | 5,78593(-9) | 5,18824(-9) | 4,59256(-9) |
| 2s6p | ³ P ₁ | 1,95383(-7) | 1,96933(-7) | 2,02030(-7) | 2,04915(-7) | 2,07947(-7) |
| 2s6p | ¹ P ₁ | 3,15941(-7) | 3,18477(-7) | 3,26805(-7) | 3,31076(-7) | 3,35101(-7) |

Tablo 3.4. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|--------------|
| 2p5d | ¹ P ₁ | 4,52543(-8) | 4,34352(-8) | 4,21331(-8) | 4,08239(-8) | 4,00326(-8) |
| 2p7s | ³ P ₁ | 4,02927(-7) | 4,02552(-7) | 3,98216(-7) | 3,97510(-7) | 3,97676(-7) |
| 2s7p | ³ P ₁ | 2,51576(-7) | 2,57426(-7) | 2,73666(-7) | 6,72927(-9) | 2,06207(-7) |
| 2s7p | ¹ P ₁ | 4,06155(-7) | 3,15328(-7) | 4,52927(-7) | 4,61587(-7) | 4,56073(-7) |
| 2p8s | ³ P ₁ | 5,72791(-7) | 6,54121(-7) | 4,96264(-7) | 7,53097(-7) | 5,59491(-7) |
| 2p9s | ³ P ₁ | 1,13970(-6) | 1,12984(-6) | 1,11831(-6) | 1,10709(-6) | 1,08674(-6) |
| 2s8p | ³ P ₁ | 3,78861(-7) | 3,75207(-7) | 3,72023(-7) | 3,69384(-7) | 3,63993(-7) |
| 2s8p | ¹ P ₁ | 7,62755(-7) | 7,54896(-7) | 7,47944(-7) | 7,42425(-7) | 7,32282(-7) |
| 2p6d | ¹ P ₁ | 5,38342(-8) | 5,16773(-8) | 5,00435(-8) | 4,75837(-8) | 4,58060(-8) |
| 2s9p | ³ P ₁ | 1,17467(-6) | 1,16921(-6) | 1,16741(-6) | 1,16785(-6) | 1,15382(-6) |
| 2s9p | ¹ P ₁ | 2,53720(-6) | 2,52643(-6) | 2,52178(-6) | 2,52144(-6) | 2,49204(-6) |
| 2p5s | ¹ P ₁ | 2,13923(-7) | 2,05673(-7) | 2,00932(-7) | 1,96971(-7) | 1,94945(-7) |
| 2p5d | ³ P ₁ | 1,84027(-8) | 1,72191(-8) | 1,64281(-8) | 1,54759(-8) | 1,50517(-8) |
| 2p6s | ¹ P ₁ | 2,23760(-7) | 2,20754(-7) | 2,17025(-7) | 2,14024(-7) | 2,10244(-7) |
| 2p6d | ³ P ₁ | 2,06756(-8) | 2,01246(-8) | 1,93558(-8) | 1,88111(-8) | 1,80303(-8) |
| 2p7s | ¹ P ₁ | 2,75017(-7) | 2,70139(-7) | 2,62356(-7) | 2,57552(-7) | 2,55048(-7) |
| 2p8s | ¹ P ₁ | 3,96554(-7) | 3,85965(-7) | 3,81428(-7) | 3,70829(-7) | 3,58592(-7) |
| 2p9s | ¹ P ₁ | 9,04806(-7) | 8,76545(-7) | 8,48262(-7) | 8,21482(-7) | 7,99267(-7) |
| 3s3p | ³ P ₁ | 7,84826(-8) | 9,41363(11) | 8,12195(-8) | 8,26896(-8) | 8,40452(-8) |
| 3s3p | ¹ P ₁ | 8,97780(-8) | 9,09717(-8) | 9,30072(-8) | 9,45384(-8) | 9,65037(-8) |
| 3s4p | ³ P ₁ | 3,97161(-8) | 3,96859(-8) | 3,94583(-8) | 3,96879(-8) | 3,91441(-8) |
| 3s4p | ¹ P ₁ | 4,38513(-8) | 4,35596(-8) | 4,31945(-8) | 4,32402(-8) | 4,25630(-8) |
| 3d4p | ³ P ₁ | 4,82254(-10) | 4,52089(-10) | 4,40782(-10) | 4,53364(-10) | 4,23986(-10) |
| 3d4p | ¹ P ₁ | 5,20409(-10) | 4,71458(-10) | 4,68066(-10) | 4,64225(-10) | 4,41742(-10) |
| 3s5p | ³ P ₁ | 3,44331(-8) | 3,37497(-8) | 3,38433(-8) | 3,32333(-8) | 3,31319(-8) |
| 3s5p | ¹ P ₁ | 4,61037(-8) | 4,49886(-8) | 4,50807(-8) | 4,40369(-8) | 4,37105(-8) |
| 3d5p | ¹ P ₁ | 1,41964(-10) | 1,29079(-10) | 1,30074(-10) | 1,14691(-10) | 1,07459(-10) |
| 3s6p | ³ P ₁ | 4,51917(-8) | 4,55934(-8) | 4,57970(-8) | 4,53572(-8) | 4,65280(-8) |
| 3s6p | ¹ P ₁ | 7,29363(-8) | 7,40586(-8) | 7,43487(-8) | 7,34886(-8) | 7,54840(-8) |
| 3s7p | ³ P ₁ | 4,69879(-8) | 4,61410(-8) | 4,60259(-8) | 4,50273(-8) | 4,38756(-8) |
| 3s7p | ¹ P ₁ | 8,40891(-8) | 8,27514(-8) | 8,26086(-8) | 8,04401(-8) | 7,86629(-8) |
| 3d6p | ¹ P ₁ | 1,13881(-10) | 1,10260(-10) | 1,06530(-10) | ————— | ————— |
| 3s8p | ³ P ₁ | 6,30701(-8) | 6,24203(-8) | 6,07030(-8) | 6,00514(-8) | 5,87476(-8) |
| 3s8p | ¹ P ₁ | 1,22517(-7) | 1,20599(-7) | 1,17708(-7) | 1,15948(-7) | 1,13341(-7) |
| 4s4p | ³ P ₁ | 6,86906(-8) | 6,90808(-8) | 6,95741(-8) | 7,13290(-8) | 7,18823(-8) |
| 3s9p | ³ P ₁ | 1,69633(-7) | 1,69610(-7) | 1,64875(-7) | 1,63904(-7) | 1,64798(-7) |
| 3s9p | ¹ P ₁ | 3,82580(-7) | 3,81929(-7) | 3,72041(-7) | 3,70425(-7) | 3,71373(-7) |
| 3d7p | ¹ P ₁ | 1,23178(-10) | 1,07306(-10) | 1,01398(-10) | ————— | ————— |

Tablo 3.4. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|--------------|
| 4s4p | ¹ P ₁ | 3,88877(-8) | 3,65753(-8) | 3,51889(-8) | 3,36916(-9) | 3,10773(-8) |
| 4p4d | ³ P ₁ | 2,20949(-8) | 2,29841(-8) | 2,46123(-8) | 2,67115(-8) | 2,82320(-8) |
| 4p4d | ³ P ₁ | 2,97373(-9) | 2,79770(-9) | 2,82640(-9) | 2,76350(-9) | 2,55058(-9) |
| 4p5s | ³ P ₁ | 4,75440(-8) | 4,86195(-8) | 4,88689(-8) | 4,85225(-8) | 4,91603(-8) |
| 4s5p | ³ P ₁ | 2,71852(-8) | 2,79465(-8) | 2,76309(-8) | 2,76381(-8) | 2,74011(-8) |
| 4s5p | ¹ P ₁ | 2,07573(-8) | 1,77158(-8) | 1,21417(-8) | 2,65234(-8) | 3,06028(-8) |
| 4p5d | ¹ P ₁ | 1,22303(-8) | 1,63049(-8) | 2,08944(-8) | 6,58436(-9) | 2,17318(-9) |
| 4p5s | ¹ P ₁ | 4,88795(-8) | 4,96243(-8) | 4,82389(-8) | 4,83960(-8) | 4,77004(-8) |
| 4d5p | ³ P ₁ | 2,81930(-9) | 2,83515(-9) | 2,63060(-9) | 2,58741(-9) | 2,50795(-9) |
| 4p5d | ³ P ₁ | 2,39475(-9) | 2,46308(-9) | 2,22074(-9) | 2,24631(-9) | 2,24374(-9) |
| 4d5p | ¹ P ₁ | 1,90434(-9) | 1,89459(-9) | 1,68410(-9) | 1,70246(-9) | 1,63472(-9) |
| 4p6s | ³ P ₁ | 4,65963(-8) | 4,67081(-8) | 4,60541(-8) | 4,67867(-8) | 4,61515(-8) |
| 4s6p | ³ P ₁ | 2,56034(-8) | 2,57732(-8) | 2,58634(-8) | 2,61802(-8) | 2,61388(-8) |
| 4s6p | ¹ P ₁ | 3,94062(-8) | 3,91350(-8) | 3,93951(-8) | 3,94431(-8) | 3,96408(-8) |
| 4p6s | ¹ P ₁ | 4,41391(-8) | 4,33276(-8) | 4,28630(-8) | 4,24906(-8) | 4,21400(-8) |
| 4d6p | ³ P ₁ | 6,07651(-10) | 5,73956(-10) | 5,10818(-10) | 5,29572(-10) | 4,65379(-10) |
| 4d6p | ¹ P ₁ | 7,13464(-10) | 6,30914(-10) | 5,94261(-10) | 6,02786(-10) | 5,55934(-10) |
| 4p7s | ³ P ₁ | 4,72009(-8) | 4,78618(-8) | 4,79255(-8) | 4,77915(-8) | 4,78067(-8) |
| 4s7p | ³ P ₁ | 2,14509(-8) | 2,10866(-8) | 2,13461(-8) | 2,04462(-8) | 2,12698(-8) |
| 4s7p | ¹ P ₁ | 3,73167(-8) | 3,62063(-8) | 3,69162(-8) | 3,47091(-8) | 3,64062(-8) |
| 4p7s | ¹ P ₁ | 4,36989(-8) | 4,28013(-8) | 4,27732(-8) | 4,11132(-8) | 4,16048(-8) |
| 4p8s | ³ P ₁ | 5,93618(-8) | 5,74447(-8) | 5,76905(-8) | 5,78214(-8) | 5,59438(-8) |
| 5s5p | ³ P ₁ | 1,87078(-8) | 1,85477(-8) | 1,79708(-8) | 1,75796(-8) | 1,77283(-8) |
| 4d7p | ¹ P ₁ | 2,81194(-10) | 2,61094(-10) | 2,53348(-10) | 2,20419(-10) | 2,60823(-10) |
| 5s5p | ¹ P ₁ | 1,84963(-8) | 1,77070(-8) | 1,70691(-8) | 1,65487(-8) | 1,60301(-8) |
| 4s8p | ³ P ₁ | 2,54359(-8) | 2,48549(-8) | 2,39339(-8) | 2,47490(-8) | 2,31081(-8) |
| 4s8p | ¹ P ₁ | 4,29730(-8) | 4,307188(-8) | 4,20393(-8) | 4,35957(-8) | 4,05811(-8) |
| 5p5d | ³ P ₁ | 1,39792(-8) | 1,24418(-8) | 1,16705(-8) | 1,07977(-8) | 9,93585(-9) |
| 4p9s | ³ P ₁ | 1,09421(-7) | 1,09160(-7) | 1,08024(-7) | 1,03431(-7) | 1,06772(-7) |
| 5p5d | ¹ P ₁ | 2,93411(-9) | 2,38488(-9) | 2,42375(-9) | 2,19598(-9) | 1,88299(-9) |
| 4p8s | ¹ P ₁ | 5,60659(-8) | 5,53259(-8) | 5,50506(-8) | 5,30618(-8) | 5,14243(-8) |
| 4d8p | ³ P ₁ | 3,07597(-10) | 2,50221(-10) | 2,45929(-10) | 2,22660(-10) | 1,90918(-10) |
| 4s9p | ³ P ₁ | 5,99584(-8) | 5,92226(-8) | 5,98897(-8) | 5,62958(-8) | 5,81140(-8) |
| 4d8p | ¹ P ₁ | 7,74032(-10) | 1,05166(-7) | 1,19758(-7) | 1,42407(-9) | 9,49781(-10) |
| 4s9p | ¹ P ₁ | 1,24122(-7) | 1,63517(-8) | 2,82120(-9) | 1,13935(-7) | 1,16731(-7) |
| 4p9s | ¹ P ₁ | 1,18008(-7) | 1,11709(-7) | 1,10560(-7) | 1,06370(-7) | 1,03997(-7) |
| 4d9p | ³ P ₁ | 1,35702(-10) | 1,22466(-10) | 1,19748(-10) | 1,00409(-10) | 1,14674(-10) |
| 4d9p | ¹ P ₁ | 3,21877(-10) | 2,71152(-10) | 2,69455(-10) | 2,31939(-10) | 2,36197(-10) |

Tablo 3.4. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|--------------|
| 5p6s | ³ P ₁ | 1,58532(-8) | 1,56827(-8) | 1,54553(-8) | 1,52892(-8) | 1,58778(-8) |
| 5s6p | ³ P ₁ | 1,28391(-8) | 1,28091(-8) | 1,29723(-8) | 1,28309(-8) | 1,34633(-8) |
| 5s6p | ¹ P ₁ | 1,95147(-8) | 1,89680(-8) | 1,93235(-8) | 1,94271(-8) | 1,99363(-8) |
| 5p6s | ¹ P ₁ | 2,87074(-8) | 2,78765(-8) | 2,75479(-8) | 2,76249(-8) | 2,79996(-8) |
| 5d6p | ³ P ₁ | 3,01959(-9) | 2,94453(-9) | 2,79889(-9) | 2,60942(-9) | 2,81895(-9) |
| 5d6p | ¹ P ₁ | 1,64471(-9) | 1,53169(-9) | 1,47032(-9) | 1,40221(-9) | 1,43875(-9) |
| 5p7s | ³ P ₁ | 1,58261(-8) | 1,58768(-8) | 1,60349(-8) | 1,55497(-8) | 1,51069(-8) |
| 5s7p | ³ P ₁ | 1,05028(-8) | 1,01720(-8) | 1,02844(-8) | 9,95100(-9) | 9,71251(-9) |
| 5s7p | ¹ P ₁ | 2,11917(-8) | 1,98952(-8) | 2,02853(-8) | 1,98462(-8) | 1,96593(-8) |
| 5p7s | ¹ P ₁ | 2,44314(-8) | 2,33789(-8) | 2,39173(-8) | 2,32610(-8) | 2,31464(-8) |
| 5d7p | ³ P ₁ | 8,24463(-10) | 8,40779(-10) | 8,37768(-10) | 7,23184(-10) | 6,96922(-10) |
| 5d7p | ¹ P ₁ | 8,20829(-10) | 7,97936(-10) | 8,16104(-10) | 7,45818(-10) | 7,51762(-10) |
| 5p8s | ³ P ₁ | 1,72287(-8) | 1,69239(-8) | 1,76182(-8) | 1,65081(-8) | 1,59896(-8) |
| 5s8p | ³ P ₁ | 1,04000(-8) | 1,08241(-8) | 1,09652(-8) | 1,04131(-8) | 1,00241(-8) |
| 6s6p | ³ P ₁ | 5,99898(-9) | 5,66263(-9) | 5,98822(-9) | 5,86917(-9) | 5,65418(-9) |
| 5s8p | ¹ P ₁ | 2,70932(-8) | 2,78881(-8) | 2,70974(-8) | 2,56385(-8) | 2,46669(-8) |
| 5p8s | ¹ P ₁ | 6,46486(-9) | 7,50439(-9) | 7,46831(-9) | 7,62331(-9) | 8,34744(-9) |
| 6s6p | ¹ P ₁ | 3,76849(-8) | 3,58945(-8) | 3,49688(-8) | 3,25209(-8) | 3,08442(-8) |
| 5d8p | ³ P ₁ | 5,85890(-10) | 5,56132(-10) | 5,59367(-10) | 4,69822(-10) | 4,35644(-10) |
| 5d8p | ¹ P ₁ | 6,94540(-10) | 6,98366(-10) | 6,16241(-10) | 5,46954(-10) | 5,21294(-10) |
| 5p9s | ³ P ₁ | 2,71970(-8) | 2,56163(-8) | 2,45952(-8) | 2,41815(-8) | 2,39038(-8) |
| 5s9p | ³ P ₁ | 2,26452(-8) | 2,04138(-8) | 2,05460(-8) | 1,97532(-8) | 1,81481(-8) |
| 5s9p | ¹ P ₁ | 4,45452(-8) | 4,03666(-8) | 4,08888(-8) | 3,89677(-8) | 3,47355(-8) |
| 5p9s | ¹ P ₁ | 4,74588(-8) | 4,52590(-8) | 4,45360(-8) | 4,36623(-8) | 3,95441(-8) |
| 5d9p | ³ P ₁ | 4,25841(-10) | 3,91024(-10) | 3,50101(-10) | 3,51270(-10) | 3,32260(-10) |
| 5d9p | ¹ P ₁ | 6,79313(-10) | 6,75561(-10) | 6,33522(-10) | 6,29758(-10) | 5,34539(-10) |
| 6p7s | ³ P ₁ | 7,37110(-9) | 7,25776(-9) | 7,49608(-9) | 7,41828(-9) | 7,24365(-9) |
| 6s7p | ³ P ₁ | 5,69233(-9) | 5,86356(-9) | 5,63751(-9) | 5,79077(-9) | 5,43939(-9) |
| 6s7p | ¹ P ₁ | 9,69708(-9) | 1,02642(-8) | 9,12043(-9) | 5,79077(-9) | 8,99411(-9) |
| 6p7s | ¹ P ₁ | 2,14226(-8) | 2,17525(-8) | 1,99212(-8) | 1,99570(-8) | 1,88150(-8) |
| 6p8s | ³ P ₁ | 8,32207(-9) | 7,90318(-9) | 7,49563(-9) | 7,06420(-9) | 7,56231(-9) |
| 6s8p | ³ P ₁ | 6,78249(-9) | 6,24723(-9) | 6,29553(-9) | 5,94092(-9) | 6,45370(-9) |
| 6s8p | ¹ P ₁ | 1,54733(-8) | 1,41621(-8) | 1,46056(-8) | 1,38352(-8) | 1,49650(-8) |
| 6p8s | ¹ P ₁ | 1,84805(-8) | 1,71156(-8) | 1,72938(-8) | 1,62216(-8) | 1,76205(-8) |
| 7s7p | ³ P ₁ | 4,84679(-9) | 4,65255(-9) | 4,34419(-9) | 4,12728(-9) | 5,02500(-9) |
| 7s7p | ¹ P ₁ | 1,15433(-8) | 1,11008(-8) | 1,08169(-8) | 1,02309(-8) | 1,04415(-8) |
| 6p9s | ³ P ₁ | 9,33413(-9) | 8,87410(-9) | 9,30176(-9) | 8,75528(-9) | 8,91890(-9) |
| 6s9p | ³ P ₁ | 2,04667(-8) | 1,99833(-8) | 2,07439(-8) | 1,91307(-8) | 2,01824(-8) |

Tablo 3.4. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|-----------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|--------------|
| 6s9p | ¹ P ₁ | 3,91160(-8) | 3,79529(-8) | 3,74049(-8) | 3,40958(-8) | 3,64046(-8) |
| 6p9s | ¹ P ₁ | 3,68066(-8) | 3,54017(-8) | 3,31137(-8) | 3,05001(-8) | 3,23425(-8) |
| 7p8s | ³ P ₁ | 3,96905(-9) | 4,15469(-9) | 4,27153(-9) | 4,27453(-9) | 3,96945(-9) |
| 7s8p | ³ P ₁ | 5,03461(-9) | 5,08978(-9) | 5,14840(-9) | 5,20307(-9) | 4,93299(-9) |
| 7s8p | ¹ P ₁ | 8,38674(-9) | 8,58761(-9) | 8,02103(-9) | 8,16647(-9) | 7,86100(-9) |
| 7p8s | ¹ P ₁ | 2,12871(-8) | 2,19780(-8) | 1,90738(-8) | 1,91468(-8) | 1,86568(-8) |
| 7p9s | ³ P ₁ | 4,03484(-10) | 3,40762(-10) | 2,84190(-10) | 2,63753(-10) | 2,05526(-10) |
| 7s9p | ³ P ₁ | 1,55394(-8) | 1,51862(-8) | 1,55900(-8) | 1,50292(-8) | 1,49170(-8) |
| 7s9p | ¹ P ₁ | 2,12783(-8) | 2,07663(-8) | 2,18726(-8) | 2,08620(-8) | 2,08975(-8) |
| 7p9s | ¹ P ₁ | 2,70085(-8) | 2,59419(-8) | 2,77846(-8) | 2,65737(-8) | 2,65280(-8) |
| 8s8p | ³ P ₁ | 4,04243(-9) | 3,74105(-9) | 4,40508(-9) | 4,05760(-9) | 4,01760(-9) |
| 8s8p | ¹ P ₁ | 1,73012(-8) | 1,59564(-8) | 1,58755(-8) | 1,45123(-8) | 1,42168(-8) |
| 8p9s | ³ P ₁ | 7,18360(-9) | 6,94131(-9) | 7,16656(-9) | 6,97279(-9) | 7,17244(-9) |
| 8s9p | ³ P ₁ | 1,36241(-8) | 1,35577(-8) | 1,44041(-8) | 1,39016(-8) | 1,38656(-8) |
| 8s9p | ¹ P ₁ | 3,24253(-10) | 3,13137(-10) | 3,01393(-10) | 3,40275(-10) | 4,02144(-10) |
| 8p9s | ¹ P ₁ | 1,28234(-8) | 1,22155(-8) | 1,22656(-8) | 1,09224(-8) | 1,05321(-8) |
| E2 Geçişleri | | | | | | |
| 1s3d | ³ D ₂ | 7,31828(-3) | 7,64431(-3) | 7,98654(-3) | 8,34603(-3) | 8,72368(-3) |
| 1s3d | ¹ D ₂ | 8,63197(-3) | 8,95309(-3) | 9,28734(-3) | 9,63556(-3) | 9,99835(-3) |
| 1s4d | ³ D ₂ | 1,12141(-2) | 1,18846(-2) | 1,25953(-2) | 1,33475(-2) | 1,41446(-2) |
| 1s4d | ¹ D ₂ | 1,40392(-2) | 1,48146(-2) | 1,56334(-2) | 1,64964(-2) | 1,74076(-2) |
| 1s5d | ³ D ₂ | 2,15314(-2) | 2,29618(-2) | 2,44776(-2) | 2,60871(-2) | 2,77925(-2) |
| 1s5d | ¹ D ₂ | 2,89559(-2) | 3,08194(-2) | 3,27912(-2) | 3,48821(-2) | 3,70948(-2) |
| 1s6d | ³ D ₂ | 4,73530(-2) | 5,05309(-2) | 5,38943(-2) | 5,74531(-2) | 6,12181(-2) |
| 1s6d | ¹ D ₂ | 6,88183(-2) | 7,34073(-2) | 7,82639(-2) | 8,34031(-2) | 8,88407(-2) |
| 1s7d | ³ D ₂ | 1,24344(-1) | 1,32348(-1) | 1,40806(-1) | 1,49728(-1) | 1,59128(-1) |
| 1s7d | ¹ D ₂ | 1,99239(-1) | 2,12187(-1) | 2,25881(-1) | 2,40335(-1) | 2,55578(-1) |
| 2p ² | ¹ D ₂ | 7,50004(-7) | 7,71307(-7) | 7,93128(-7) | 8,14728(-7) | 8,37872(-7) |
| 2p ² | ³ P ₂ | 6,56024(-8) | 6,57840(-8) | 6,60011(-8) | 6,61257(-8) | 6,63594(-8) |
| 2p3p | ³ D ₂ | 1,36454(-6) | 1,41510(-6) | 1,46900(-6) | 1,52580(-6) | 1,57691(-6) |
| 2p3p | ³ D ₂ | 1,15190(-6) | 3,27192(10) | 1,20272(-6) | 1,22777(-6) | 1,25417(-6) |
| 2p3p | ³ P ₂ | 4,19257(-7) | 4,26143(-7) | 4,34698(-7) | 7,69042(-8) | 4,50161(-7) |
| 2p4p | ³ D ₂ | 2,37119(-6) | 2,45161(-6) | 2,53624(-6) | 2,62042(-6) | 2,72047(-6) |
| 2p4f | ³ F ₂ | 3,00356(-8) | 3,03127(-8) | 3,05023(-8) | 3,00426(-8) | 3,13865(-8) |
| 2p5p | ³ D ₂ | 4,13340(-6) | 4,30718(-6) | 4,46628(-6) | 4,63298(-6) | 4,75558(-6) |
| 2p4p | ³ D ₂ | 8,61112(-6) | 1,39949(-6) | 1,12286(-6) | 5,43471(-6) | 9,31151(-6) |
| 2p6p | ³ D ₂ | 1,46856(-6) | 8,97028(-6) | 9,63815(-6) | 5,61825(-6) | 2,17821(-6) |
| 2p4p | ³ P ₂ | 8,93385(-7) | 8,67824(-7) | 8,62436(-7) | 8,69079(-7) | 8,74791(-7) |

Tablo 3.4. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2p4f | ³ F ₂ | 3,24683(-9) | 3,41442(-9) | 3,28586(-9) | 3,30719(-9) | 3,32674(-9) |
| 2p4f | ¹ D ₂ | 1,94575(-8) | 2,09103(-8) | 2,07968(-8) | 2,19969(-8) | 2,49313(-8) |
| 2p7p | ³ D ₂ | 2,07656(-5) | 2,13893(-5) | 2,16492(-5) | 2,23503(-5) | 2,30834(-5) |
| 2p8p | ³ D ₂ | 7,09187(-5) | 7,27117(-5) | 7,54287(-5) | 7,72303(-5) | 7,90759(-5) |
| 2p9p | ³ D ₂ | 7,08839(-4) | 7,21866(-4) | 7,33358(-4) | 7,45257(-4) | 7,52522(-4) |
| 2p5p | ³ D ₂ | 4,25436(-6) | 4,23268(-6) | 4,24557(-6) | 4,24032(-6) | 4,28344(-6) |
| 2p5p | ³ P ₂ | 1,56800(-6) | 1,58339(-6) | 1,61279(-6) | 1,62636(-6) | 1,66638(-6) |
| 2p6p | ³ D ₂ | 5,33717(-6) | 5,42958(-6) | 5,48973(-6) | 5,57299(-6) | 5,61777(-6) |
| 2p6p | ³ P ₂ | 3,15699(-6) | 3,21826(-6) | 3,25487(-6) | 3,31012(-6) | 3,33321(-6) |
| 2p7p | ³ D ₂ | 1,07590(-5) | 1,09024(-5) | 1,08526(-5) | 1,09871(-5) | 1,12685(-5) |
| 2p7p | ³ P ₂ | 7,71540(-6) | 7,83553(-6) | 7,77341(-6) | 7,88898(-6) | 8,13271(-6) |
| 2p8p | ³ D ₂ | 3,11370(-5) | 3,12237(-5) | 3,20146(-5) | 3,20033(-5) | 3,17388(-5) |
| 2p8p | ³ P ₂ | 2,63349(-5) | 2,64325(-5) | 2,71719(-5) | 2,71820(-5) | 2,69478(-5) |
| 2p9p | ³ D ₂ | 2,51709(-4) | 2,50849(-4) | 2,49325(-4) | 2,48355(-4) | 2,48662(-4) |
| 2p9p | ³ P ₂ | 2,71797(-4) | 2,70775(-4) | 2,69129(-4) | 2,67971(-4) | 2,68171(-4) |
| 3p ² | ¹ D ₂ | 8,34386(-7) | 8,55051(-7) | 8,77476(-7) | 8,98130(-7) | 9,17353(-7) |
| 3p ² | ³ P ₂ | 1,97358(-7) | 2,00230(-7) | 2,04783(-7) | 2,07957(-7) | 2,11422(-7) |
| 3p4p | ³ D ₂ | 8,04141(-7) | 8,23744(-7) | 8,40989(-7) | 8,71831(-7) | 8,87936(-7) |
| 3p4p | ³ D ₂ | 7,66860(-7) | 7,754018(-7) | 7,90833(-7) | 8,11427(-7) | 8,21769(-7) |
| 3p4p | ³ P ₂ | 4,21893(-7) | 4,23589(-7) | 4,31416(-7) | 4,42410(-7) | 4,48428(-7) |
| 3p5p | ³ D ₂ | 1,02835(-6) | 1,05812(-6) | 1,09210(-6) | 1,09432(-6) | 1,14025(-6) |
| 3p5p | ³ D ₂ | 9,34994(-7) | 9,42541(-7) | 9,63352(-7) | 9,70553(-7) | 9,85644(-7) |
| 3p5p | ³ P ₂ | 5,81752(-7) | 5,87019(-7) | 6,02408(-7) | 6,08452(-7) | 6,20358(-7) |
| 3p6p | ³ D ₂ | 2,00194(-6) | 2,03872(-6) | 2,07271(-6) | 2,09173(-6) | 2,17415(-6) |
| 3p6p | ³ D ₂ | 9,21005(-7) | 8,53551(-7) | 6,92858(-7) | 4,52032(-7) | 1,84525(-7) |
| 3p7p | ³ D ₂ | 4,43388(-6) | 4,76876(-6) | 5,26998(-6) | 5,72102(-6) | 5,86205(-6) |
| 3p6p | ³ P ₂ | 1,55588(-6) | 1,25092(-6) | 1,18824(-6) | 1,13940(-6) | 1,12842(-6) |
| 3p8p | ³ D ₂ | 1,39436(-5) | 1,47089(-5) | 1,44701(-5) | 1,48104(-5) | 1,51530(-5) |
| 3p7p | ³ D ₂ | 2,41253(-6) | 2,23666(-6) | 2,09586(-6) | 1,95632(-6) | 1,63904(-6) |
| 3p7p | ³ P ₂ | 2,29178(-6) | 2,22826(-6) | 2,20640(-6) | 2,20221(-6) | 2,00999(-6) |
| 3p9p | ³ D ₂ | 1,34441(-4) | 1,37033(-4) | 1,38130(-4) | 1,37917(-4) | 1,40677(-4) |
| 4p ² | ¹ D ₂ | 2,37528(-7) | 2,96346(-7) | 3,55890(-7) | 4,06128(-7) | 4,33843(-7) |
| 3p8p | ³ D ₂ | 9,71888(-6) | 9,89723(-6) | 9,84710(-6) | 9,57944(-6) | 1,01108(-5) |
| 3p8p | ³ P ₂ | 7,81202(-6) | 8,01028(-6) | 7,97692(-6) | 7,73284(-6) | 8,27472(-6) |
| 4p ² | ³ P ₂ | 8,05957(-8) | 8,11592(-8) | 8,69665(-8) | 8,71103(-8) | 8,78338(-8) |
| 3p9p | ³ D ₂ | 6,94569(-5) | 6,88715(-5) | 6,95702(-5) | 7,05730(-5) | 6,80216(-5) |
| 3p9p | ³ P ₂ | 7,60691(-5) | 7,53920(-5) | 7,60882(-5) | 7,70774(-5) | 7,43441(-5) |
| 4p5p | ³ D ₂ | 3,19525(-7) | 3,30233(-7) | 3,35700(-7) | 3,24499(-7) | 3,41658(-7) |

Tablo 3.4. (Devamı)

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 4p5p | ¹ D ₂ | 9,64502(-7) | 1,00571(-6) | 1,01407(-6) | 1,04397(-6) | 1,08386(-6) |
| 4p5p | ³ P ₂ | 4,06650(-7) | 4,23751(-7) | 4,11399(-7) | 4,28466(-7) | 4,38681(-7) |
| 4p6p | ³ D ₂ | 8,58257(-7) | 8,63696(-7) | 8,42567(-7) | 8,95530(-7) | 8,73773(-7) |
| 4p6p | ³ D ₂ | 8,51621(-7) | 8,40386(-7) | 8,43951(-7) | 8,72471(-7) | 8,66009(-7) |
| 4p6p | ³ P ₂ | 5,67925(-7) | 5,51964(-7) | 5,52510(-7) | 5,66396(-7) | 5,66852(-7) |
| 4p7p | ³ D ₂ | 1,61176(-6) | 1,75580(-6) | 1,76625(-6) | 1,80491(-6) | 1,85969(-6) |
| 4p7p | ³ D ₂ | 1,26377(-6) | 1,27692(-6) | 1,28546(-6) | 1,27671(-6) | 1,31295(-6) |
| 4p7p | ³ P ₂ | 1,02301(-6) | 1,02753(-6) | 1,03605(-6) | 1,02268(-6) | 1,05885(-6) |
| 4p8p | ³ D ₂ | 5,73101(-6) | 5,41474(-6) | 5,69925(-6) | 5,89465(-6) | 5,63674(-6) |
| 4p8p | ³ D ₂ | 3,43696(-6) | 3,50237(-6) | 3,62656(-6) | 3,52344(-6) | 3,46503(-6) |
| 4p8p | ³ P ₂ | 3,20805(-6) | 3,30264(-6) | 3,43562(-6) | 3,31935(-6) | 3,27678(-6) |
| 4p9p | ³ D ₂ | 4,69449(-5) | 4,77314(-5) | 8,24994(-8) | 4,67971(-5) | 4,96013(-5) |
| 4p9p | ³ D ₂ | 2,71392(-5) | 2,60932(-5) | 2,62562(-5) | 2,59469(-5) | 2,58292(-5) |
| 4p9p | ³ P ₂ | 3,04063(-5) | 2,91710(-5) | 2,93343(-5) | 2,89581(-5) | 2,87608(-5) |
| M1 Geçişleri | | | | | | |
| 2p ² | ³ P ₁ | 1,17676(-9) | 1,22508(-9) | 1,27531(-9) | 1,32699(-9) | 1,38051(-9) |
| 2p3p | ³ P ₁ | 2,76551(-10) | 2,90947(-10) | 3,04329(-10) | 3,17671(-10) | 3,30691(-10) |
| 2p3p | ³ P ₁ | 1,81491(-10) | 1,86742(-10) | 1,92130(-10) | 1,97534(-10) | 2,02991(-10) |
| 2p4p | ³ P ₁ | 1,02804(-10) | 1,06272(-10) | 1,10245(-10) | 1,13851(-10) | 1,18058(-10) |
| M2 Geçişleri | | | | | | |
| 1s2p | ³ P ₂ | 3,03100(-3) | 3,13197(-3) | 3,23435(-3) | 3,33806(-3) | 3,44303(-3) |
| 1s2p | ³ P ₂ | 4,78922(-4) | 4,85456(-4) | 4,91430(-4) | 4,96798(-4) | 5,01518(-4) |
| 1s4p | ³ P ₂ | 6,45452(-5) | 6,16556(-5) | 5,85476(-5) | 5,52381(-5) | 5,17374(-5) |
| 1s5p | ³ P ₂ | 3,60641(-7) | 5,81705(-8) | 1,92490(-8) | 2,91960(-7) | 9,29246(-7) |
| 1s6p | ³ P ₂ | 2,12244(-5) | 2,60436(-5) | 3,16125(-5) | 3,80126(-5) | 4,53304(-5) |
| 1s7p | ³ P ₂ | 9,05442(-5) | 1,03332(-4) | 1,17548(-4) | 1,33311(-4) | 1,50752(-4) |
| 1s8p | ³ P ₂ | 2,59736(-4) | 2,89117(-4) | 3,21232(-4) | 3,56303(-4) | 3,94581(-4) |
| 1s7f | ³ F ₂ | ————— | ————— | ————— | ————— | 4,22328(-10) |
| 1s9p | ³ P ₂ | 1,03666(-3) | 1,13575(-3) | 1,24298(-3) | 1,35879(-3) | 1,48384(-3) |
| 2s2p | ³ P ₂ | 3,52477(-8) | 3,53838(-8) | 3,54670(-8) | 3,55652(-8) | 3,56035(-8) |
| 2s3p | ³ P ₂ | 3,13999(-10) | 4,71606(-10) | 6,66851(-10) | 9,08981(-10) | 1,18788(-9) |
| 2p3s | ³ P ₂ | 1,63856(-8) | 1,65094(-8) | 1,66630(-8) | 1,67984(-8) | 1,69123(-8) |
| 2p4d | ³ P ₂ | 2,45867(-10) | 2,58132(-10) | 2,59453(-10) | 2,65113(-10) | 2,75810(-10) |
| 2s5p | ³ P ₂ | 2,01721(-9) | 2,21578(-9) | 2,33970(-9) | 2,55552(-9) | 2,70203(-9) |
| 2p4s | ³ P ₂ | 1,04337(-8) | 1,04935(-8) | 1,04445(-8) | 1,04752(-8) | 1,04486(-8) |
| 2s6p | ³ P ₂ | 9,57987(-9) | 1,01942(-8) | 1,11044(-8) | 1,18841(-8) | 1,27093(-8) |
| 2p5d | ³ P ₂ | 9,61375(-10) | 9,69420(-10) | 9,88357(-10) | 9,96198(-10) | 1,02174(-9) |
| 2s7p | ³ P ₂ | 1,59366(-8) | 1,67699(-8) | 1,75075(-8) | 1,84795(-8) | 1,95844(-8) |

Tablo 3.4. (Devamı)

| Seviyeler | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|-----------|-----------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 2s8p | ³ P ₂ | 3,11162(-8) | 3,23793(-8) | 3,36814(-8) | 3,51004(-8) | 3,63328(-8) |
| 2p6d | ³ P ₂ | 1,72816(-9) | 1,73900(-9) | 1,74206(-9) | 1,71887(-9) | 1,67909(-9) |
| 2s9p | ³ P ₂ | 1,15948(-7) | 1,21002(-7) | 1,26610(-7) | 1,32692(-7) | 1,37283(-7) |
| 2p5s | ³ P ₂ | 1,15799(-8) | 1,14704(-8) | 1,15249(-8) | 1,15336(-8) | 1,16768(-8) |
| 2p6s | ³ P ₂ | 1,20062(-8) | 1,22027(-8) | 1,23130(-8) | 1,24813(-8) | 1,26158(-8) |
| 2p7s | ³ P ₂ | 1,45944(-8) | 1,48435(-8) | 1,49376(-8) | 1,51487(-8) | 1,54897(-8) |
| 2p8s | ³ P ₂ | 2,07896(-8) | 2,10553(-8) | 2,16169(-8) | 2,18355(-8) | 2,19439(-8) |
| 2p9s | ³ P ₂ | 4,74516(-8) | 4,80447(-8) | 4,85160(-8) | 4,90269(-8) | 4,98870(-8) |
| 3s3p | ³ P ₂ | 1,11913(-10) | ————— | ————— | ————— | ————— |
| 3s4p | ³ P ₂ | 2,50009(-10) | 2,38306(-10) | 2,36900(-10) | 2,27840(-10) | 2,31135(-10) |
| 3s6p | ³ P ₂ | 1,09486(-9) | 1,19190(-9) | 1,28478(-9) | 1,36445(-9) | 1,53535(-9) |
| 3s7p | ³ P ₂ | 2,08198(-9) | 2,16175(-9) | 2,28839(-9) | 2,32670(-9) | 2,40148(-9) |
| 3s8p | ³ P ₂ | 4,36428(-9) | 4,50347(-9) | 2,28839(-9) | 4,79021(-9) | 4,87361(-9) |
| 3s9p | ³ P ₂ | 1,79517(-8) | 1,88163(-8) | 2,28839(-9) | 1,99769(-8) | 2,11342(-8) |
| 4s4p | ³ P ₂ | 3,53586(-10) | 3,52952(-10) | 2,28839(-9) | 3,34848(-10) | 3,17945(-10) |
| 4p5s | ³ P ₂ | 7,42093(-10) | 7,36337(-10) | 2,28839(-9) | 7,26039(-10) | 7,41081(-10) |
| 4s6p | ³ P ₂ | 1,72639(-10) | 2,01181(-10) | 2,28839(-9) | 2,56992(-10) | 2,94380(-10) |
| 4p6s | ³ P ₂ | 9,81764(-10) | 9,59601(-10) | 2,28839(-9) | 9,62418(-10) | 2,94380(-10) |
| 4s7p | ³ P ₂ | 4,46682(-10) | 4,61907(-10) | 2,28839(-9) | 5,00784(-10) | 5,96844(-10) |
| 4p7s | ³ P ₂ | 1,41690(-9) | 1,42873(-9) | 2,28839(-9) | 1,45483(-9) | 1,45964(-9) |
| 5s5p | ³ P ₂ | 1,29693(-10) | 1,18968(-10) | 2,28839(-9) | 1,39626(-10) | 1,18522(-10) |
| 4s8p | ³ P ₂ | 1,11976(-9) | 1,16606(-9) | 2,28839(-9) | 1,28276(-9) | 1,23161(-9) |
| 4p8s | ³ P ₂ | 2,26433(-9) | 2,32469(-9) | 2,28839(-9) | 2,36351(-9) | 2,40007(-9) |
| 4d8p | ³ P ₂ | ————— | ————— | ————— | 1,07020(-10) | 1,09247(-9) |
| 4s9p | ³ P ₂ | 4,99563(-9) | 5,17897(-9) | 5,48797(-9) | 5,36433(-9) | 4,81445(-9) |
| 4p9s | ³ P ₂ | 5,71363(-9) | 5,58853(-9) | 5,70953(-9) | 5,77888(-9) | 5,76743(-9) |
| 5p6s | ³ P ₂ | 2,35948(-10) | 2,31827(-10) | 2,20836(-10) | 2,12849(-10) | 2,11679(-10) |
| 5p7s | ³ P ₂ | 4,333768(-10) | 4,55619(-10) | 4,61518(-10) | 4,50213(-10) | 4,72358(-10) |
| 5s8p | ³ P ₂ | 2,83991(-10) | 3,34376(-10) | 3,65422(-10) | 3,71541(-10) | 3,78779(-10) |
| 5p8s | ³ P ₂ | 8,61312(-10) | 8,75922(-10) | 8,30576(-10) | 8,10770(-10) | 8,50152(-10) |
| 5s9p | ³ P ₂ | 1,21280(-9) | 1,10494(-9) | 1,20768(-9) | 1,19283(-10) | 1,10826(-9) |
| 5p9s | ³ P ₂ | 2,28261(-9) | 2,36987(-9) | 2,38284(-9) | 2,44161(-9) | 2,46054(-9) |
| 6p7s | ³ P ₂ | 1,44871(-10) | 1,42698(-10) | 1,43386(-10) | 1,43476(-11) | 1,46531(-10) |
| 6p8s | ³ P ₂ | 2,82802(-10) | 3,00025(-10) | 2,91519(-10) | 3,07606(-11) | 3,09591(-10) |
| 6s9p | ³ P ₂ | 7,58602(-10) | 7,91251(-10) | 8,96377(-10) | 8,42101(-11) | 9,66837(-10) |
| 6p9s | ³ P ₂ | 8,07852(-10) | 7,92102(-10) | 7,30422(-10) | 7,46380(-10) | 7,42138(-10) |
| 7s9p | ³ P ₂ | 1,05463(-10) | 1,28497(-10) | 1,52392(-10) | 1,654228(-10) | 1,77642(-10) |
| 7p9s | ³ P ₂ | 2,64813(-10) | 2,31772(-10) | 2,48393(-10) | 2,28896(-10) | 2,45445(-10) |
| 8s9p | ³ P ₂ | 1,81547(-9) | 1,78476(-9) | 1,76883(-9) | 1,785758(-9) | 1,84194(-9) |
| 8p9s | ³ P ₂ | 1,49807(-9) | 1,61621(-9) | 1,71169(-9) | 1,874078(-9) | 2,07346(-9) |

Tablo 3.5. Helyum benzeri Aynştaynyum, Fermiyum, Mendelevyum, Nobelyum, Lavrensiyum'um taban hale yapılan geçişlerinin geçiş olasılıkları.

| Seviye | | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|--------------|-----------------------------|--------------------------|---------------------------------------|---------------------------|----------------------------|----------------------------|
| E1 Geçişleri | | | | | | |
| 1s2p | ³ P ₁ | 2,75169(16) | 2,83374(16) 4.339(16) ^a | 2,91598(16) | 2,99832(16) | 3,08061(16) |
| 1s2p | ¹ P ₁ | 6,15731D(16) | 6,36076(16) 6.848(16) ^a | 6,56705(16) | 6,77605(16) | 6,98761(16) |
| 1s3p | ³ P ₁ | 1,95575(15) | 1,90922(15) 4.254(14) ^a | 1,85718(15) | 1,79968(15) | 1,73682(15) |
| 1s3p | ¹ P ₁ | 9,93074(15) | 1,00671(16) | 1,01921(16) | 1,03050(16) | 1,04048(16) |
| 1s4p | ³ P ₁ | 3,26744(13) | 1,99572(13) | 9,91920(12) | 3,10403(12) | 9,10286(10) |
| 1s4p | ¹ P ₁ | 1,38141(15) | 1,32230(15) | 1,25859(15) | 1,19061(15) | 1,11854(15) |
| 1s5p | ³ P ₁ | 1,65052(14) | 2,08354(14) | 2,58926(14) | 3,17565(14) | 3,85058(14) |
| 1s5p | ¹ P ₁ | 1,21775(13) | 3,55209(12) | 3,51921(10) | 2,58106(12) | 1,22469(13) |
| 1s6p | ³ P ₁ | 6,61440(14) | 7,61190(14) | 8,72270(14) | 9,95671(14) | 1,13244(15) |
| 1s6p | ¹ P ₁ | 4,04992(14) | 4,99418(14) | 6,08788(14) | 7,34736(14) | 8,78993(14) |
| 1s7p | ³ P ₁ | 1,47156(15) | 1,64857(15) | 1,84279(15) | 2,05549(15) | 2,28805(15) |
| 1s7p | ¹ P ₁ | 1,79517(15) | 2,05071(15) | 2,33493(15) | 2,65021(15) | 2,99918(15) |
| 1s8p | ³ P ₁ | 3,15709(15) | 3,48776(15) | 3,84706(15) | 4,23714(15) | 4,66051(15) |
| 1s8p | ¹ P ₁ | 5,22125(15) | 5,81301(15) | 6,45988(15) | 7,16633(15) | 7,93742(15) |
| 1s9p | ³ P ₁ | 1,00762(16) | 1,10170(16) | 1,20335(16) | 1,31298(16) | 1,43118(16) |
| 1s9p | ¹ P ₁ | 2,10504(16) | 2,30579(16) | 2,52298(16) | 2,75753(16) | 3,01075(16) |
| 2s2p | ³ P ₁ | 4,91117(9) | 7,69117(9) | 1,12961(10) | 1,56921(10) | 2,10685(10) |
| 2s2p | ¹ P ₁ | 4,35204(10) | 3,91204(10) | 3,46802(10) | 3,04764(10) | 2,62941(10) |
| 2p3s | ³ P ₁ | 1,54271(11) | 1,66285(11) | 1,79227(11) | 1,93160(11) | 2,07590(11) |
| 2s3p | ³ P ₁ | 1,09935(11) | 1,20446(11) | 1,31653(11) | 1,43781(11) | 1,56322(11) |
| 2s3p | ¹ P ₁ | 1,18198(11) | 1,33149(11) | 1,48981(11) | 1,66970(11) | 1,85516(11) |
| 2p3d | ¹ P ₁ | 1,08784(10) | 1,09065(10) | 1,09913(10) | 1,10968(10) | 1,11211(10) |
| 2p3s | ¹ P ₁ | 7,32843(10) | 7,87324(10) | 8,46174(10) | 9,09729(10) | 9,74156(10) |
| 2p3d | ³ P ₁ | 4,86978(9) | 4,77423(9) | 4,72144(9) | 4,68479(9) | 4,58385(9) |
| 2p4s | ³ P ₁ | 4,06795(11) | 4,35784(11) | 4,66727(11) | 4,98556(11) | 5,34756(11) |
| 2s4p | ³ P ₁ | 4,98459(10) | 5,24887(10) | 5,58111(10) | 5,83737(10) | 6,19017(10) |
| 2s4p | ¹ P ₁ | 6,62396(10) | 7,03326(10) | 7,53687(10) | 7,92153(10) | 8,47274(10) |
| 2p4d | ¹ P ₁ | 2,23522(10) | 2,29345(10) | 2,31871(10) | 2,34510(10) | 2,41656(10) |
| 2p5s | ³ P ₁ | 3,31389(11) | 3,51484(11) | 3,71532(11) | 3,92782(11) | 4,13165(11) |
| 2s5p | ³ P ₁ | 1,00893(11) | 1,07217(11) | 1,11915(11) | 1,18730(11) | 1,24089(11) |
| 2s5p | ¹ P ₁ | 1,34520(11) | 1,43304(11) | 1,49241(11) | 1,58398(11) | 1,65612(11) |
| 2p4s | ¹ P ₁ | 1,75392(11) | 1,84266(11) | 1,92158(11) | 1,99786(11) | 1,95920(11) |
| 2p6s | ³ P ₁ | 3,40655(11) | 3,57681(11) | 3,77857(11) | 3,97009(11) | 4,32983(11) |
| 2p4d | ³ P ₁ | 7,64281(9) | 6,78040(9) | 6,18379(9) | 5,80428(9) | 5,37631(9) |
| 2s6p | ³ P ₁ | 1,91142(11) | 2,01696(11) | 2,16547(11) | 2,29786(11) | 2,43878(11) |

Tablo 3.5. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|-------------|
| 2s6p | ¹ P ₁ | 3,09278(11) | 3,26386(11) | 3,50511(11) | 3,71496(11) | 3,93254(11) |
| 2p5d | ¹ P ₁ | 4,43306(10) | 4,45520(10) | 4,52355(10) | 4,58620(10) | 4,70426(10) |
| 2p7s | ³ P ₁ | 3,95566(11) | 4,13651(11) | 4,28153(11) | 4,47041(11) | 4,67630(11) |
| 2s7p | ³ P ₁ | 2,48088(11) | 2,65762(11) | 2,95675(11) | 7,60628(9) | 2,43763(11) |
| 2s7p | ¹ P ₁ | 4,00664(11) | 3,25652(11) | 4,89454(11) | 5,21922(11) | 5,39326(11) |
| 2p8s | ³ P ₁ | 5,65198(11) | 6,75584(11) | 5,36362(11) | 8,51229(11) | 6,61243(11) |
| 2p9s | ³ P ₁ | 1,12858(12) | 1,17104(12) | 1,21277(12) | 1,25578(12) | 1,28891(12) |
| 2s8p | ³ P ₁ | 3,75522(11) | 3,89337(11) | 4,03993(11) | 4,19647(11) | 4,32474(11) |
| 2s8p | ¹ P ₁ | 7,56187(11) | 7,83483(11) | 8,12383(11) | 8,43620(11) | 8,70227(11) |
| 2p6d | ¹ P ₁ | 5,34657(10) | 5,37408(10) | 5,44738(10) | 5,41984(10) | 5,45751(10) |
| 2s9p | ³ P ₁ | 1,16845(12) | 1,21754(12) | 1,27221(12) | 1,33145(12) | 1,37573(12) |
| 2s9p | ¹ P ₁ | 2,52406(12) | 2,63117(12) | 2,74850(12) | 2,87500(12) | 2,97168(12) |
| 2p5s | ¹ P ₁ | 2,12991(11) | 2,14486(11) | 2,19401(11) | 2,25118(11) | 2,33130(11) |
| 2p5d | ³ P ₁ | 1,83514(10) | 1,79854(10) | 1,79666(10) | 1,77157(10) | 1,80288(10) |
| 2p6s | ¹ P ₁ | 2,25749(11) | 2,33270(11) | 2,40114(11) | 2,47845(11) | 2,54746(11) |
| 2p6d | ³ P ₁ | 2,08810(10) | 2,12878(10) | 2,14376(10) | 2,18070(10) | 2,18702(10) |
| 2p7s | ¹ P ₁ | 2,79638(11) | 2,87690(11) | 2,92535(11) | 3,00577(11) | 3,11437(11) |
| 2p8s | ¹ P ₁ | 4,05240(11) | 4,13099(11) | 4,27428(11) | 4,34933(11) | 4,40051(11) |
| 2p9s | ¹ P ₁ | 9,27782(11) | 9,41363(11) | 9,53794(11) | 9,66757(11) | 9,84150(11) |
| 3s3p | ³ P ₁ | 8,26424(10) | 8,79968(10) | 9,37306(10) | 9,98497(10) | 1,06155(11) |
| 3s3p | ¹ P ₁ | 9,53333(10) | 1,01157(11) | 1,08261(11) | 1,15155(11) | 1,22969(11) |
| 3s4p | ³ P ₁ | 4,41139(10) | 4,61529(10) | 4,80290(10) | 5,05451(10) | 5,21435(10) |
| 3s4p | ¹ P ₁ | 4,88383(10) | 5,07955(10) | 5,27209(10) | 5,52215(10) | 5,68559(10) |
| 3d4p | ³ P ₁ | 5,39335(8) | 5,29384(8) | 5,40238(8) | 5,81399(8) | 5,68722(8) |
| 3d4p | ¹ P ₁ | 5,84752(8) | 5,54717(8) | 5,76484(8) | 5,98291(8) | 5,95540(8) |
| 3s5p | ³ P ₁ | 3,91676(10) | 4,01942(10) | 4,21852(10) | 4,33418(10) | 4,51940(10) |
| 3s5p | ¹ P ₁ | 5,25032(10) | 5,36413(10) | 5,62578(10) | 5,74986(10) | 5,96941(10) |
| 3d5p | ¹ P ₁ | 1,63117(8) | 1,55298(8) | 1,63809(8) | 1,51136(8) | 1,48124(8) |
| 3s6p | ³ P ₁ | 5,20520(10) | 5,49814(10) | 5,78011(10) | 5,98940(10) | 6,42607(10) |
| 3s6p | ¹ P ₁ | 8,40564(10) | 8,93592(10) | 9,38908(10) | 9,70976(10) | 1,04313(11) |
| 3s7p | ³ P ₁ | 5,45212(10) | 5,60528(10) | 4,60259(-8) | 5,98959(10) | 6,10426(10) |
| 3s7p | ¹ P ₁ | 9,76015(10) | 1,00559(11) | 1,05064(11) | 1,07036(11) | 1,09476(11) |
| 3d6p | ¹ P ₁ | 1,32418(8) | 1,34244(8) | 1,35761(8) | ————— | ————— |
| 3s8p | ³ P ₁ | 7,35276(10) | 7,61867(10) | 7,75424(10) | 8,02565(10) | 8,21167(10) |
| 3s8p | ¹ P ₁ | 1,42857(11) | 1,47224(11) | 1,50388(11) | 1,54989(11) | 1,58455(11) |
| 4s4p | ³ P ₁ | 8,02841(10) | 8,45287(10) | 8,90958(10) | 9,55633(10) | 1,00720(11) |
| 3s9p | ³ P ₁ | 1,98401(11) | 2,07687(11) | 2,11294(11) | 2,19760(11) | 2,31096(11) |
| 3s9p | ¹ P ₁ | 4,47511(11) | 4,67724(11) | 4,76837(11) | 4,96713(11) | 5,20832(11) |

Tablo 3.5. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|----------------------------------|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 3d7p ¹ P ₁ | 1,44249(8) | 1,31576(8) | 1,30139(8) | _____ | _____ |
| 4s4p ¹ P ₁ | 4,56293(10) | 4,49323(10) | 4,52443(10) | 4,53232(11) | 4,37256(10) |
| 4p4d ³ P ₁ | 2,59353(10) | 2,82461(10) | 3,16566(10) | 3,59452(10) | 3,97349(10) |
| 4p4d ³ P ₁ | 3,50047(9) | 3,44808(9) | 3,64593(9) | 3,72980(9) | 3,60058(9) |
| 4p5s ³ P ₁ | 5,68631(10) | 6,08761(10) | 6,40349(10) | 6,65164(10) | 7,04783(10) |
| 4s5p ³ P ₁ | 3,25620(10) | 3,50452(10) | 3,62633(10) | 3,79493(10) | 3,93498(10) |
| 4s5p ¹ P ₁ | 2,48966(10) | 2,22462(10) | 1,59568(10) | 3,64714(10) | 4,40112(10) |
| 4p5d ¹ P ₁ | 1,46710(10) | 2,04765(10) | 2,74621(10) | 9,05322(9) | 3,12507(9) |
| 4p5s ¹ P ₁ | 5,86869(10) | 6,23787(10) | 6,34622(10) | 6,66124(10) | 6,86674(10) |
| 4d5p ³ P ₁ | 3,38633(9) | 3,56525(9) | 3,46214(9) | 3,56273(9) | 3,61176(9) |
| 4p5d ³ P ₁ | 2,87932(9) | 3,10056(9) | 2,92575(9) | 3,09628(9) | 3,23467(9) |
| 4d5p ¹ P ₁ | 2,29128(9) | 2,38664(9) | 2,22038(9) | 2,34840(9) | 2,35848(9) |
| 4p6s ³ P ₁ | 5,64086810 | 5,91940(10) | 6,10792(10) | 6,49142(10) | 6,69653(10) |
| 4s6p ³ P ₁ | 3,10508(10) | 3,27235(10) | 3,43670(10) | 3,63955(10) | 3,80044(10) |
| 4s6p ¹ P ₁ | 4,78213(10) | 4,97211(10) | 5,23823(10) | 5,48697(10) | 5,76738(10) |
| 4p6s ¹ P ₁ | 5,36391(10) | 5,51240(10) | 5,70725(10) | 5,91911(10) | 6,13948(10) |
| 4d6p ³ P ₁ | 7,38679(8) | 7,30468(8) | 6,80390(8) | 7,37968(8) | 6,78259(8) |
| 4d6p ¹ P ₁ | 8,68497(8) | 8,04072(8) | 7,92646(8) | 8,41191(8) | 8,11408(8) |
| 4p7s ³ P ₁ | 5,75506(10) | 6,10907(10) | 6,40158(10) | 6,67816(10) | 6,98612(10) |
| 4s7p ³ P ₁ | 2,62044(10) | 2,69679(10) | 2,85706(10) | 2,86303(10) | 3,11492(10) |
| 4s7p ¹ P ₁ | 4,56019(10) | 4,63209(10) | 4,94277(10) | 4,86195(10) | 5,33349(10) |
| 4p7s ¹ P ₁ | 5,34846(10) | 5,48440(10) | 5,73594(10) | 5,76802(10) | 6,10461(10) |
| 4p8s ³ P ₁ | 7,27104(10) | 7,36583(10) | 7,74116(10) | 8,11656(10) | 8,21244(10) |
| 5s5p ³ P ₁ | 2,29251(10) | 2,37951(10) | 2,41281(10) | 2,46929(10) | 2,60432(10) |
| 4d7p ¹ P ₁ | 3,44683(8) | 3,35069(8) | 3,40271(8) | 3,09729(8) | 3,82820(8) |
| 5s5p ¹ P ₁ | 2,26976(10) | 2,27485(10) | 2,29499(10) | 2,32781(10) | 2,35825(10) |
| 4s8p ³ P ₁ | 3,12167(10) | 3,19345(10) | 3,21824(10) | 3,48154(10) | 3,39971(10) |
| 4s8p ¹ P ₁ | 5,27498(10) | 5,53512(10) | 5,65388(10) | 6,13400(10) | 5,97157(10) |
| 5p5d ³ P ₁ | 1,71601(10) | 1,59895(10) | 1,56964(10) | 1,51933(10) | 1,46216(10) |
| 4p9s ³ P ₁ | 1,34452(11) | 1,40414(11) | 1,45411(11) | 1,45649(11) | 1,57234(11) |
| 5p5d ¹ P ₁ | 3,60573(9) | 3,06831(9) | 3,26351(9) | 3,09345(9) | 2,77418(9) |
| 4p8s ¹ P ₁ | 6,89353(10) | 7,12165(10) | 7,41603(10) | 7,47826(10) | 7,57968(10) |
| 4d8p ³ P ₁ | 3,78302(8) | 3,22175(8) | 3,31390(8) | 3,13894(8) | 2,81485(8) |
| 4s9p ³ P ₁ | 7,38185(10) | 7,63323(10) | 8,07846(10) | 7,94437(10) | 8,57681(10) |
| 4d8p ¹ P ₁ | 9,53047(8) | 1,35564(11) | 1,61558(11) | 2,00999(9) | 1,40204(9) |
| 4s9p ¹ P ₁ | 1,52832(11) | 2,10784(10) | 3,80607(9) | 1,60801(11) | 1,72298(11) |
| 4p9s ¹ P ₁ | 1,45549(11) | 1,44242(11) | 1,49401(11) | 1,50378(11) | 1,53762(11) |
| 4d9p ³ P ₁ | 1,67410(8) | 1,58170(8) | 1,61858(8) | 1,41987(8) | 1,69592(8) |

Tablo 3.5. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|-------------|
| 4d9p | ¹ P ₁ | 3,97529(8) | 3,50598(8) | 3,64626(8) | 3,28361(8) | 3,49724(8) |
| 5p6s | ³ P ₁ | 1,96623(10) | 2,03627(10) | 2,10010(10) | 2,17344(10) | 2,36052(10) |
| 5s6p | ³ P ₁ | 1,59291(10) | 1,66371(10) | 1,76330(10) | 1,82461(10) | 2,00227(10) |
| 5s6p | ¹ P ₁ | 2,42267(10) | 2,46524(10) | 2,62832(10) | 2,76442(10) | 2,96689(10) |
| 5p6s | ¹ P ₁ | 3,56532(10) | 3,62449(10) | 3,74844(10) | 3,93249(10) | 4,16849(10) |
| 5d6p | ³ P ₁ | 3,75113(9) | 3,82944(9) | 3,80941(9) | 3,71553(9) | 4,19782(9) |
| 5d6p | ¹ P ₁ | 2,04471(9) | 1,99353(9) | 2,00272(9) | 1,99815(9) | 2,14419(9) |
| 5p7s | ³ P ₁ | 1,97683(10) | 2,07612(10) | 2,19431(10) | 2,22611(10) | 2,26177(10) |
| 5s7p | ³ P ₁ | 1,31246(10) | 1,33072(10) | 1,40801(10) | 1,42526(10) | 1,45483(10) |
| 5s7p | ¹ P ₁ | 2,64910(10) | 2,60362(10) | 2,77817(10) | 2,84350(10) | 2,94577(10) |
| 5p7s | ¹ P ₁ | 3,05580(10) | 3,06126(10) | 3,27745(10) | 3,33465(10) | 3,47025(10) |
| 5d7p | ³ P ₁ | 1,03143(9) | 1,10115(9) | 1,14825(9) | 1,03696(9) | 1,04509(9) |
| 5d7p | ¹ P ₁ | 1,02751(9) | 1,04569(9) | 1,11926(9) | 1,07009(9) | 1,12804(9) |
| 5p8s | ³ P ₁ | 2,16180(10) | 2,22307(10) | 2,42189(10) | 2,37399(10) | 2,40471(10) |
| 5s8p | ³ P ₁ | 1,30558(10) | 1,42252(10) | 1,50809(10) | 1,49826(10) | 1,50834(10) |
| 6s6p | ³ P ₁ | 7,53229(9) | 7,44324(9) | 8,23728(9) | 8,44612(9) | 8,50942(9) |
| 5s8p | ¹ P ₁ | 3,40188(10) | 3,66583(10) | 3,72756(10) | 3,68964(10) | 3,71242(10) |
| 5p8s | ¹ P ₁ | 8,12271(9) | 9,87079(9) | 1,02802(10) | 1,09779(10) | 1,25713(10) |
| 6s6p | ¹ P ₁ | 4,73500(10) | 4,72145(10) | 4,81363(10) | 4,68328(10) | 4,64526(10) |
| 5d8p | ³ P ₁ | 7,36271(8) | 7,31637(8) | 7,70121(8) | 6,76694(8) | 6,56209(8) |
| 5d8p | ¹ P ₁ | 8,73276(8) | 9,19256(8) | 8,48889(8) | 7,88224(8) | 7,85661(8) |
| 5p9s | ³ P ₁ | 3,42325(10) | 3,37537(10) | 3,39149(10) | 3,48828(10) | 3,60610(10) |
| 5s9p | ³ P ₁ | 2,85173(10) | 2,69122(10) | 2,83462(10) | 2,85099(10) | 2,73929(10) |
| 5s9p | ¹ P ₁ | 5,61025(10) | 5,32226(10) | 5,64182(10) | 5,62487(10) | 5,24358(10) |
| 5p9s | ¹ P ₁ | 5,98139(10) | 5,97148(10) | 6,14935(10) | 6,30692(10) | 5,97364(10) |
| 5d9p | ³ P ₁ | 5,36781(8) | 5,15996(8) | 4,83480(8) | 5,07482(8) | 5,02002(8) |
| 5d9p | ¹ P ₁ | 8,56711(8) | 8,91920(8) | 8,75321(8) | 9,10281(8) | 8,08038(8) |
| 6p7s | ³ P ₁ | 9,32090(9) | 9,60763(9) | 1,03845(10) | 1,07508(10) | 1,09784(10) |
| 6s7p | ³ P ₁ | 7,19891(9) | 7,76296(9) | 7,81071(9) | 8,39324(9) | 8,24493(9) |
| 6s7p | ¹ P ₁ | 1,22678(10) | 1,35938(10) | 1,26406(10) | 1,38037(10) | 1,36378(10) |
| 6p7s | ¹ P ₁ | 2,71070(10) | 2,88142(10) | 2,76154(10) | 2,89415(10) | 2,85348(10) |
| 6p8s | ³ P ₁ | 1,05710(10) | 1,05093(10) | 1,04307(10) | 1,02837(10) | 1,15128(10) |
| 6s8p | ³ P ₁ | 8,61688(9) | 8,30872(9) | 8,76220(9) | 8,65009(9) | 9,82688(9) |
| 6s8p | ¹ P ₁ | 1,96620(10) | 1,88391(10) | 2,03322(10) | 2,01483(10) | 2,27913(10) |
| 6p8s | ¹ P ₁ | 2,34897(10) | 2,27741(10) | 2,40809(10) | 2,36299(10) | 2,68428(10) |
| 7s7p | ³ P ₁ | 6,17293(9) | 6,20314(9) | 6,06125(9) | 6,02420(9) | 7,67026(9) |
| 7s7p | ¹ P ₁ | 1,47073(10) | 1,48061(10) | 1,50980(10) | 1,49387(10) | 1,59443(10) |
| 6p9s | ³ P ₁ | 1,18934(10) | 1,18369(10) | 1,29840(10) | 1,27848(10) | 1,36199(10) |

Tablo 3.5. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|-----------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|-------------|
| 6s9p | ³ P ₁ | 2,60833(10) | 2,66603(10) | 2,89615(10) | 2,79412(10) | 3,08265(10) |
| 6s9p | ¹ P ₁ | 4,98559(10) | 5,06397(10) | 5,22282(10) | 4,98037(10) | 5,56103(10) |
| 6p9s | ¹ P ₁ | 4,69271(10) | 4,72504(10) | 4,62509(10) | 4,45653(10) | 4,94204(10) |
| 7p8s | ³ P ₁ | 5,07796(9) | 5,56444(9) | 5,98679(9) | 6,26726(9) | 6,08630(9) |
| 7s8p | ³ P ₁ | 6,44158(9) | 6,81720(9) | 7,21617(9) | 7,62912(9) | 7,56413(9) |
| 7s8p | ¹ P ₁ | 1,07326(10) | 1,15044(10) | 1,12448(10) | 1,19766(10) | 1,20562(10) |
| 7p8s | ¹ P ₁ | 2,72441(10) | 2,94460(10) | 2,67426(10) | 2,80829(10) | 2,86165(10) |
| 7p9s | ³ P ₁ | 5,17810(8) | 4,57797(8) | 3,99536(8) | 3,87901(8) | 3,16098(8) |
| 7s9p | ³ P ₁ | 1,99442(10) | 2,04037(10) | 2,19196(10) | 2,21054(10) | 2,29443(10) |
| 7s9p | ¹ P ₁ | 2,73127(10) | 2,79037(10) | 3,07559(10) | 3,06876(10) | 3,21464(10) |
| 7p9s | ¹ P ₁ | 3,46729(10) | 3,48632(10) | 3,90747(10) | 3,90949(10) | 4,08136(10) |
| 8s8p | ³ P ₁ | 5,19548(9) | 5,03330(9) | 6,20208(9) | 5,97625(9) | 6,18809(9) |
| 8s8p | ¹ P ₁ | 2,22412(10) | 2,14730(10) | 2,23568(10) | 2,13792(10) | 2,19023(10) |
| 8p9s | ³ P ₁ | 9,26119(9) | 9,36784(9) | 1,01212(10) | 1,03015(10) | 1,10812(10) |
| 8s9p | ³ P ₁ | 1,75655(10) | 1,82984(10) | 2,03440(10) | 2,05394(10) | 2,14234(10) |
| 8s9p | ¹ P ₁ | 4,18089(8) | 4,22661(8) | 3,01393(-10) | 5,02785(8) | 6,21386(8) |
| 8p9s | ¹ P ₁ | 1,65358(10) | 1,64896(10) | 1,73264(10) | 1,61402(10) | 1,62756(10) |
| E2 Geçişleri | | | | | | |
| 1s3d | ³ D ₂ | 1,18207(15) | 1,29409(15) | 1,41655(15) | 1,55045(15) | 1,69685(15) |
| 1s3d | ¹ D ₂ | 1,40373(15) | 1,52613(15) | 1,65887(15) | 1,80284(15) | 1,95898(15) |
| 1s4d | ³ D ₂ | 1,99331(15) | 2,21364(15) | 2,45751(15) | 2,72715(15) | 3,02541(15) |
| 1s4d | ¹ D ₂ | 2,50182(15) | 2,76650(15) | 3,05827(15) | 3,37950(15) | 3,73339(15) |
| 1s5d | ³ D ₂ | 3,99452(15) | 4,46345(15) | 4,98381(15) | 5,56165(15) | 6,20229(15) |
| 1s5d | ¹ D ₂ | 5,37816(15) | 5,99793(15) | 6,68450(15) | 7,44572(15) | 8,28839(15) |
| 1s6d | ³ D ₂ | 8,98713(15) | 1,00481(16) | 1,12247(16) | 1,25288(16) | 1,39734(16) |
| 1s6d | ¹ D ₂ | 1,30689(16) | 1,46060(16) | 1,63103(16) | 1,81991(16) | 2,02912(16) |
| 1s7d | ³ D ₂ | 2,39208(16) | 2,66752(16) | 2,97240(16) | 3,30932(16) | 3,68125(16) |
| 1s7d | ¹ D ₂ | 3,83416(16) | 4,27816(16) | 4,76992(16) | 5,31377(16) | 5,91455(16) |
| 2p ² | ¹ D ₂ | 3,40889(11) | 3,67071(11) | 3,95081(11) | 4,24647(11) | 4,56795(11) |
| 2p ² | ³ P ₂ | 3,11357(10) | 3,27192(10) | 3,43897(10) | 3,60825(10) | 3,79084(10) |
| 2p3p | ³ D ₂ | 7,26110(11) | 7,88199(11) | 8,56144(11) | 9,30141(11) | 1,00517(12) |
| 2p3p | ³ D ₂ | 6,32566(11) | 6,76767(11) | 7,24363(11) | 7,73998(11) | 8,27311(11) |
| 2p3p | ³ P ₂ | 2,32292(11) | 2,47335(11) | 2,64205(11) | 2,81865(11) | 2,99733(11) |
| 2p4p | ³ D ₂ | 1,33101(12) | 1,44032(12) | 1,55898(12) | 1,68468(12) | 1,82867(12) |
| 2p4f | ³ F ₂ | 1,69855(10) | 1,79458(10) | 1,88979(10) | 1,94723(10) | 2,12752(10) |
| 2p5p | ³ D ₂ | 2,37710(12) | 2,59247(12) | 2,81251(12) | 3,05130(12) | 3,27461(12) |
| 2p4p | ³ D ₂ | 5,01681(12) | 8,53266(11) | 7,16819(11) | 3,63077(12) | 6,49485(12) |
| 2p6p | ³ D ₂ | 8,54841(11) | 5,46947(12) | 6,14827(12) | 3,74899(12) | 1,52296(12) |

Tablo 3.5. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|-----------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|-------------|
| 2p4p | ³ P ₂ | 5,21558(11) | 5,30674(11) | 5,52211(11) | 5,82469(11) | 6,13492(11) |
| 2p4f | ³ F ₂ | 1,89922(9) | 2,09210(9) | 2,10821(9) | 2,22114(9) | 2,33801(9) |
| 2p4f | ¹ D ₂ | 1,13900(10) | 1,28218(10) | 1,33533(10) | 1,47847(10) | 1,75352(10) |
| 2p7p | ³ D ₂ | 1,21919(13) | 1,31428(13) | 1,39170(13) | 1,50262(13) | 1,62249(13) |
| 2p8p | ³ D ₂ | 4,18494(13) | 4,49051(13) | 4,87346(13) | 5,21852(13) | 5,58621(13) |
| 2p9p | ³ D ₂ | 4,19766(14) | 4,47382(14) | 4,75495(14) | 5,05353(14) | 5,33483(14) |
| 2p5p | ³ D ₂ | 2,54013(12) | 2,64696(12) | 2,77989(12) | 2,90605(12) | 3,07161(12) |
| 2p5p | ³ P ₂ | 9,37377(11) | 9,91444(11) | 1,05736(12) | 1,11602(12) | 1,19647(12) |
| 2p6p | ³ D ₂ | 3,22942(12) | 3,44097(12) | 3,64263(12) | 3,87040(12) | 4,08217(12) |
| 2p6p | ³ P ₂ | 1,91143(12) | 2,04084(12) | 2,16108(1) | 2,30030(12) | 2,42362(12) |
| 2p7p | ³ D ₂ | 6,56149(12) | 6,96379(12) | 7,25773(12) | 7,69037(12) | 8,25249(12) |
| 2p7p | ³ P ₂ | 4,70693(12) | 5,00660(12) | 5,20032(12) | 5,52377(12) | 5,95803(12) |
| 2p8p | ³ D ₂ | 1,90851(13) | 2,00444(13) | 2,15177(13) | 2,25130(13) | 2,33603(13) |
| 2p8p | ³ P ₂ | 1,61450(13) | 1,69721(13) | 1,82665(13) | 1,91253(13) | 1,98381(13) |
| 2p9p | ³ D ₂ | 1,54812(14) | 1,61587(14) | 1,68150(14) | 1,75304(14) | 1,83643(14) |
| 2p9p | ³ P ₂ | 1,67188(14) | 1,74444(14) | 1,81528(14) | 1,89174(14) | 1,98075(14) |
| 3p ² | ¹ D ₂ | 5,29888(11) | 5,68575(11) | 6,10744(11) | 6,54101(11) | 6,98843(11) |
| 3p ² | ³ P ₂ | 1,26353(11) | 1,34241(11) | 1,43722(11) | 1,52732(11) | 1,62439(11) |
| 3p4p | ³ D ₂ | 5,36461(11) | 5,75360(11) | 6,14793(11) | 6,66830(11) | 7,10337(11) |
| 3p4p | ³ D ₂ | 5,14307(11) | 5,44515(11) | 5,81291(11) | 6,24074(11) | 6,61106(11) |
| 3p4p | ³ P ₂ | 2,83715(11) | 2,98270(11) | 3,17978(11) | 3,41204(11) | 3,61764(11) |
| 3p5p | ³ D ₂ | 7,01535(11) | 7,55734(11) | 8,16342(11) | 8,55820(11) | 9,32657(11) |
| 3p5p | ³ D ₂ | 6,42130(11) | 6,77768(11) | 7,25072(11) | 7,64334(11) | 8,11910(11) |
| 3p5p | ³ P ₂ | 3,99991(11) | 4,22605(11) | 4,53933(11) | 4,79731(11) | 5,11611(11) |
| 3p6p | ³ D ₂ | 1,38209(12) | 1,47353(12) | 1,56786(12) | 1,65535(12) | 1,79948(12) |
| 3p6p | ³ D ₂ | 6,40449(11) | 6,21455(11) | 5,27994(11) | 3,60419(11) | 1,53883(11) |
| 3p7p | ³ D ₂ | 3,08295(12) | 3,47133(12) | 4,01479(12) | 4,55979(12) | 4,88658(12) |
| 3p6p | ³ P ₂ | 1,08254(12) | 9,11296(11) | 9,06031(11) | 9,09024(11) | 9,41647(11) |
| 3p8p | ³ D ₂ | 9,74016(12) | 1,07567(13) | 1,10745(13) | 1,18585(13) | 1,26889(13) |
| 3p7p | ³ D ₂ | 1,69000(12) | 1,64047(12) | 1,60891(12) | 1,57131(12) | 1,37696(12) |
| 3p7p | ³ P ₂ | 1,60592(12) | 1,63482(12) | 1,69430(12) | 1,76937(12) | 1,68914(12) |
| 3p9p | ³ D ₂ | 9,42133(13) | 1,00533(14) | 1,06054(14) | 1,10780(14) | 1,18176(14) |
| 4p ² | ¹ D ₂ | 1,67177(11) | 2,18373(11) | 2,74477(11) | 3,27712(11) | 3,66149(11) |
| 3p8p | ³ D ₂ | 6,84032(12) | 7,29329(12) | 7,59480(12) | 7,73034(12) | 8,53390(12) |
| 3p8p | ³ P ₂ | 5,49924(12) | 5,90387(12) | 6,15351(12) | 6,24133(12) | 6,98549(12) |
| 4p ² | ³ P ₂ | 5,68710(10) | 5,99607(10) | 6,72479(10) | 7,04768(10) | 7,43266(10) |
| 3p9p | ³ D ₂ | 4,90418(13) | 5,09140(13) | 5,38291813 | 5,71321(13) | 5,75959(13) |
| 3p9p | ³ P ₂ | 5,37168(13) | 5,57409(13) | 5,88792(13) | 6,24050(13) | 6,29566(13) |

Tablo 3.5. (Devamı)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) |
|---|--------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| 4p5p ³ D ₂ | 2,29876(11) | 2,48733(11) | 2,64629(11) | 2,67624(11) | 2,94703(11) |
| 4p5p ¹ D ₂ | 6,94784(11) | 7,58488(11) | 8,00419(11) | 8,62122(11) | 9,36127(11) |
| 4p5p ³ P ₂ | 2,93279(11) | 3,19965(11) | 3,25115(11) | 3,54260(11) | 3,79352(11) |
| 4p6p ³ D ₂ | 6,24652(11) | 6,58104(11) | 6,71894(11) | 7,47121(11) | 7,62393(11) |
| 4p6p ³ D ₂ | 6,21034(11) | 6,41607(11) | 6,74339(11) | 7,29347(11) | 7,57152(11) |
| 4p6p ³ P ₂ | 4,14381(11) | 4,21641(11) | 4,41716(11) | 4,73748(11) | 4,95878(11) |
| 4p7p ³ D ₂ | 1,18124(12) | 1,34717(12) | 1,41826(12) | 1,51623(12) | 1,63386(12) |
| 4p7p ³ D ₂ | 9,28233(11) | 9,81905(11) | 1,03450(12) | 1,07493(12) | 1,15613(12) |
| 4p7p ³ P ₂ | 7,51621(11) | 7,90370(11) | 8,34031(11) | 8,61309(11) | 9,32667(11) |
| 4p8p ³ D ₂ | 4,21919(12) | 4,17331(12) | 4,59699(12) | 4,97414(12) | 4,97449(12) |
| 4p8p ³ D ₂ | 2,53609(12) | 2,70562(12) | 2,93198(12) | 2,98020(12) | 3,06517(12) |
| 4p8p ³ P ₂ | 2,36760(12) | 2,55177(12) | 2,77810(12) | 2,80807(12) | 2,89916(12) |
| 4p9p ³ D ₂ | 3,46679(13) | 3,69016(13) | 2,52319(10) | 3,96107(13) | 4,39081(13) |
| 4p9p ³ D ₂ | 2,00885(13) | 2,02204(13) | 2,12937(13) | 2,20149(13) | 2,29197(13) |
| 4p9p ³ P ₂ | 2,25093(13) | 2,26079(13) | 2,37927(13) | 2,45724(13) | 2,55238(13) |
| M1 Geçişleri | | | | | |
| 2p ² ³ P ₁ | 8,91257(8) | 9,71527(8) | 1,05859(9) | 1,15254(9) | 1,25417(9) |
| 2p3p ³ P ₁ | 2,45259(8) | 2,70082(8) | 2,95601(8) | 3,22753(8) | 3,51316(8) |
| 2p3p ³ P ₁ | 1,66109(8) | 1,79022(8) | 1,92858(8) | 2,07547(8) | 2,23172(8) |
| 2p4p ³ P ₁ | 9,61772(7) | 1,04058(8) | 1,12943(8) | 1,21991(8) | 1,32262(8) |
| M2 Geçişleri | | | | | |
| 1s2p ³ P ₂ | 3,55706(14) | 3,85216(14) | 4,16777(14) | 4,50502(14) | 4,86502(14) |
| 1s3p ³ P ₂ | 7,60317(13) | 8,07261(13) | 8,55676(13) | 9,05450(13) | 9,56455(13) |
| 1s4p ³ P ₂ | 1,12447(13) | 1,12476(13) | 1,11800(13) | 1,10376(13) | 1,08142(13) |
| 1s5p ³ P ₂ | 6,56018(10) | 1,10793(10) | 3,83736(9) | 6,08996(10) | 2,02741(11) |
| 1s6p ³ P ₂ | 3,95049(12) | 5,07534(12) | 6,44794(12) | 8,11217(12) | 1,01181(13) |
| 1s7p ³ P ₂ | 1,70846(13) | 2,04134(13) | 2,43044(13) | 2,88384(13) | 3,41080(13) |
| 1s8p ³ P ₂ | 4,94411(13) | 5,76183(13) | 6,70013(13) | 7,77520(13) | 9,00556(13) |
| 1s7f ³ F ₂ | ————— | ————— | ————— | ————— | 9,63989(7) |
| 1s9p ³ P ₂ | 1,98541(14) | 2,27732(14) | 2,60841(14) | 2,98326(14) | 3,40725(14) |
| 2s2p ³ P ₂ | 1,61497(10) | 1,69814(10) | 1,78231(10) | 1,87080(10) | 1,95973(10) |
| 2s3p ³ P ₂ | 1,68848(8) | 2,65552(8) | 3,93055(8) | 5,60646(8) | 7,66434(8) |
| 2p3s ³ P ₂ | 9,01286(9) | 9,51225(9) | 1,00533(10) | 1,06092(10) | 1,11771(10) |
| 2p4d ³ P ₂ | 1,41248(8) | 1,55285(8) | 1,63381(8) | 1,74695(8) | 1,90118(8) |
| 2s5p ³ P ₂ | 1,16959(9) | 1,34502(9) | 1,48639(9) | 1,69854(9) | 1,87832(9) |
| 2p4s ³ P ₂ | 6,07845(9) | 6,40337(9) | 6,67359(9) | 7,00601(9) | 7,31238(9) |
| 2s6p ³ P ₂ | 5,62666(9) | 6,26838(9) | 7,14590(9) | 8,00092(9) | 8,94887(9) |
| 2p5d ³ P ₂ | 5,65305(8) | 5,96879(8) | 6,36972(8) | 6,71797(8) | 7,20732(8) |
| 2s7p ³ P ₂ | 9,43263(9) | 1,03913(10) | 1,13532(10) | 1,25369(10) | 1,38956(10) |

Tablo 3.5. (Devami)

| Seviye | Es ⁹⁷⁺ (Z=99) | Fm ⁹⁸⁺ (Z=100) | Md ⁹⁹⁺ (Z=101) | No ¹⁰⁰⁺ (Z=102) | Lr ¹⁰¹⁺ (Z=103) | |
|--------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------------|-------------|
| 2s8p | ³ P ₂ | 1,85089(10) | 2,01633(10) | 2,19499(10) | 2,39308(10) | 2,59062(10) |
| 2p6d | ³ P ₂ | 1,03005(9) | 1,08533(9) | 1,13805(9) | 1,17498(9) | 1,20062(9) |
| 2s9p | ³ P ₂ | 6,92082(10) | 7,56113(10) | 8,27956(10) | 9,07788(10) | 9,82236(10) |
| 2p5s | ³ P ₂ | 6,91762(9) | 7,17711(9) | 7,55051(9) | 7,90903(9) | 8,37834(9) |
| 2p6s | ³ P ₂ | 7,26773(9) | 7,73670(9) | 8,17372(9) | 8,67218(9) | 9,17168(9) |
| 2p7s | ³ P ₂ | 8,90376(9) | 9,48470(9) | 9,99351(9) | 1,06076(10) | 1,13486(10) |
| 2p8s | ³ P ₂ | 1,27470(10) | 1,35213(10) | 1,45344(10) | 1,53661(10) | 1,61572(10) |
| 2p9s | ³ P ₂ | 2,91939(10) | 3,09585(10) | 3,27311(10) | 3,46182(10) | 3,68560(10) |
| 3s3p | ³ P ₂ | 7,12738(7) | _____ | _____ | _____ | _____ |
| 3s4p | ³ P ₂ | 1,67058(8) | 1,66729(8) | 1,73482(8) | 1,74577(8) | 1,85244(8) |
| 3s6p | ³ P ₂ | 7,57067(8) | 8,62882(8) | 9,73481(8) | 1,08167(9) | 1,27303(9) |
| 3s7p | ³ P ₂ | 1,44992(9) | 1,57617(9) | 1,74625(9) | 1,85759(9) | 2,00529(9) |
| 3s8p | ³ P ₂ | 3,05330(9) | 3,29860(9) | 3,53664(9) | 3,84186(9) | 4,08811(9) |
| 3s9p | ³ P ₂ | 1,25991(10) | 1,38259(10) | 1,47483(10) | 1,60725(10) | 1,77838(10) |
| 4s4p | ³ P ₂ | 2,48891(8) | 2,60119(8) | 2,76848(8) | 2,70233(8) | 2,68374(9) |
| 4p5s | ³ P ₂ | 5,34580(8) | 5,55339(8) | 5,66918(8) | 5,99579(8) | 6,40082(8) |
| 4s6p | ³ P ₂ | 1,25702(8) | 1,53359(8) | 1,85202(8) | 2,14501(8) | 2,56975(8) |
| 4p6s | ³ P ₂ | 7,15834(8) | 7,32513(8) | 7,63641(8) | 8,04405(8) | 2,56975(8) |
| 4s7p | ³ P ₂ | 3,27512(8) | 3,54565(8) | 4,15588(8) | 4,20888(8) | 5,24621(8) |
| 4p7s | ³ P ₂ | 1,04051(9) | 1,09842(9) | 1,16321(9) | 1,22464(9) | 1,28502(9) |
| 5s5p | ³ P ₂ | 9,54807(7) | 9,16946(7) | 1,17356(8) | 1,17830(8) | 1,04606(8) |
| 4s8p | ³ P ₂ | 8,24710(8) | 8,99093(8) | 9,18445(8) | 1,08292(9) | 1,08740(9) |
| 4p8s | ³ P ₂ | 1,67045(9) | 1,79543(9) | 1,96273(9) | 1,99860(9) | 2,12255(9) |
| 4d8p | ³ P ₂ | _____ | _____ | _____ | 9,06214(7) | 9,67502(8) |
| 4s9p | ³ P ₂ | 3,69067(9) | 4,00558(9) | 4,44210(9) | 4,54254(9) | 4,26376(9) |
| 4p9s | ³ P ₂ | 4,22824(9) | 4,32964(9) | 4,62924(9) | 4,90184(9) | 5,11633(9) |
| 5p6s | ³ P ₂ | 1,75819(8) | 1,80849(8) | 1,80291(8) | 1,81795(8) | 1,89081(8) |
| 5p7s | ³ P ₂ | 3,25230(8) | 3,57954(8) | 3,79456(8) | 3,87249(8) | 4,24910(8) |
| 5s8p | ³ P ₂ | 2,13950(8) | 2,63717(8) | 3,01607(8) | 3,20810(8) | 3,42040(8) |
| 5p8s | ³ P ₂ | 6,49315(8) | 6,91281(8) | 6,85982(8) | 7,00528(8) | 7,68200(8) |
| 5s9p | ³ P ₂ | 9,16479(8) | 8,74105(8) | 9,99809(8) | 1,03309(10) | 1,00380(9) |
| 5p9s | ³ P ₂ | 1,72610(9) | 1,87608(9) | 1,97407(9) | 2,11611(9) | 2,23017(9) |
| 6p7s | ³ P ₂ | 1,09985(8) | 1,13412(8) | 1,19258(8) | 1,24839(9) | 1,33335(8) |
| 6p8s | ³ P ₂ | 2,15673(8) | 2,39528(8) | 2,43556(8) | 2,68852(9) | 2,82974(8) |
| 6s9p | ³ P ₂ | 5,80131(8) | 6,33447(8) | 7,50963(8) | 7,38032(9) | 8,86140(8) |
| 6p9s | ³ P ₂ | 6,17985(8) | 6,34323(8) | 6,12118(8) | 6,54341(9) | 6,80404(8) |
| 7s9p | ³ P ₂ | 8,12228(7) | 1,03597(8) | 1,28571(8) | 1,45999(9) | 1,63960(8) |
| 7p9s | ³ P ₂ | 2,03973(8) | 1,86885(8) | 2,09593(8) | 2,02047(9) | 2,26569(8) |
| 8s9p | ³ P ₂ | 1,40453(9) | 1,44542(9) | 1,49908(9) | 1,58319(9) | 1,70771(9) |
| 8p9s | ³ P ₂ | 1,15902(9) | 1,30897(9) | 1,45071(9) | 1,66155(9) | 1,92243(9) |

3.3. Tartışma

Bu çalışma hidrojen, helyum ve lityum benzeri aktinit atomlarının atomik yapılarının incelenmesine yönelik bir çalışmanın parçası olarak gerçekleştirilmiştir. Seviye yapıları ilk defa belirlenen helyum benzeri aynştaynyum (Es^{97+} , $Z=99$), fermiyum (Fm^{98+} , $Z=100$), mendelevyum (Md^{99+} , $Z=101$), nobelyum (No^{100+} , $Z=102$) ve lavrensiyumun (Lr^{101+}) izinli (E1) ve yasaklı (E2, M1 ve M2) geçişleri de incelenmiştir. Taban hale yapılan geçişlerin dalga boyları, salıncı şiddetleri ve geçiş olasılıkları tablolştırılmıştır. Geçiş verilerinin bir stisna hariç hiçbiri için ne teorik ne de deneysel bir karşılaştırma değeri ulaşılabilir kaynaklarda yoktur.

Hemen hemen tüm verileri kaynaklarda ilk defa yer alacak bu çalışmanın gelecekte yapılacak olan teorik ve deneysel tüm çalışmalara faydalı olacağını düşünmekteyiz.

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ÖZGEÇMİŞ

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