Prof. ORHAN BAYRAK

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Education Information

Doctorate, Erciyes University, Fen Bilimleri Enstitüsü, Fizik, Turkey 2004 - 2008
Postgraduate, Erciyes University, Fen Bilimleri Enstitüsü, Fizik, Turkey 2001 - 2004
Undergraduate, Erciyes University, Fen Fakültesi, Fizik, Turkey 1997 - 2001

Research Areas

Physics, Atomic and Molecular Physics, Nuclear physics, Natural Sciences

Academic Titles / Tasks

Professor, Akdeniz University, Faculty of Science, Department of Physics, 2017 - Continues
Associate Professor, Akdeniz University, Faculty of Science, Department of Physics, 2013 - 2017
Assistant Professor, Akdeniz University, Faculty of Science, Department of Physics, 2010 - 2013

Academic and Administrative Experience

Head of Department, Akdeniz University, Faculty Of Science, Department of Physics, 2014 - 2023
Fakülte Kurulu Üyesi, Akdeniz University, Faculty Of Science, Department of Physics, 2017 - 2020
Fakülte Yönetim Kurulu Üyesi, Akdeniz University, Faculty Of Science, Department of Physics, 2017 - 2020
Head of Department, Akdeniz University, Faculty Of Science, Fizik, 2017 - 2020
Akdeniz University, 2012 - 2016

Advising Theses

Bayrak O., Radyasyon tedavilerinde kullanılan ağır iyonların X-ışınına karşı üstünlüklerinin radyobiyolojik ve dozimetrik parametreler üzerinden araştırılması, Doctorate, N.İLKER(Student), 2020
Bayrak O., Genelleştirilmiş Woods-Saxon Potansiyel Alanında Spin-0 Parçacıklarının Davranışı, Postgraduate, D.Şahin(Student), 2019

BAYRAK O., Düşük Enerji Bölgesinde 156Gd Çekirdeğinin Teorik ve Deneysel İncelenmesi, Doctorate, E.AÇIKSÖZ(Student), 2016

BAYRAK O., Alfa kümelenme potansiyeliyle hafif çekirdeklerin nükleer yapı ve rezonant gözlenirlerinin incelenmesi, Postgraduate, R.DAĞTAŞ(Student), 2016

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Optical properties of a quantum dot confined in inverse square root truncated exponential potential under varied conditions of temperature, hydrostatic pressure, and electric/magnetic fields**
BAYRAK K., KAYA D., BAYRAK O.
European Physical Journal Plus, vol.139, no.8, 2024 (SCI-Expanded)

II. **The effect of position-dependent effective mass on the optical properties of a spherical quantum dot confined in inverse square root truncated and deformed exponential potential**
BAYRAK K., KAYA D., BAYRAK O.
European Physical Journal Plus, vol.138, no.6, 2023 (SCI-Expanded)

III. **The total absorption coefficient and refrractive index change of a spherical quantum dot in the confinement radial potential**
Kaya D., Yücel M. B., Bayrak O.
PHYSICA B: CONDENSED MATTER, vol.648, no.2023, pp.1-8, 2023 (SCI-Expanded)

IV. **Clustering effect in description of the alpha and heavier decay half-life**
Dagtas R., BAYRAK O.
Physica Scripta, vol.97, no.10, 2022 (SCI-Expanded)

V. **NEW PREDICTIONS ON ALPHA DECAY HALF-LIVES OF SUPERHEAVY NUCLEI**
Dagtas R., BAYRAK O.
Acta Physica Polonica B, vol.53, no.9, 2022 (SCI-Expanded)

VI. **Pocket resonances in low-energy antineutron reactions with nuclei**
Lee T., BAYRAK O., Wong C.
PHYSICS LETTERS B, vol.817, 2021 (SCI-Expanded)

VII. **Bound state solutions of the Klein-Gordon equation with energy-dependent potentials**
LÜTFÜOĞLU B. C., Ikot A. N., Karakoc M., Osobonye G. T., Ngiangia A. T., Bayrak O.
MODERN PHYSICS LETTERS A, vol.36, no.4, 2021 (SCI-Expanded)

VIII. **A new simple model for the alpha-decay**
Bayrak O.
JOURNAL OF PHYSICS G-NUCLEAR AND PARTICLE PHYSICS, vol.47, no.2, 2020 (SCI-Expanded)

IX. **Investigation of deformation effects on the decay properties of C-12 + alpha Cluster states in O-16**
Soylu A., Koyuncu F., Cohan A., BAYRAK O., Freer M.
ANNALS OF PHYSICS, vol.391, pp.263-277, 2018 (SCI-Expanded)

X. **Binary cluster model calculations for Ne-20 and Ti-44 nuclei**
Koyuncu F., Soylu A., BAYRAK O.
MODERN PHYSICS LETTERS A, vol.32, no.9, 2017 (SCI-Expanded)

XI. **Binding energy of the donor impurities in GaAs-Ga1-xAlxAs quantum well wires with Morse potential in the presence of electric and magnetic fields**
Aciksoz E., BAYRAK O., Soylu A.
CHINESE PHYSICS B, vol.25, no.10, 2016 (SCI-Expanded)

XII. **Scattering, bound, and quasi-bound states of the generalized symmetric Woods-Saxon potential**
LÜTFÜOĞLU B. C., Akdeniz F., BAYRAK O.
JOURNAL OF MATHEMATICAL PHYSICS, vol.57, no.3, 2016 (SCI-Expanded)

XIII. **Exact Analytical Solution of the Klein-Gordon Equation in the Generalized Woods-Saxon Potential**
BAYRAK O., SAHIN D.
COMMUNICATIONS IN THEORETICAL PHYSICS, vol.64, no.3, pp.259-262, 2015 (SCI-Expanded)

XIV. alpha-alpha folding cluster model for alpha-radioactivity
Soylu A., BAYRAK O.
EUROPEAN PHYSICAL JOURNAL A, vol.51, no.4, 2015 (SCI-Expanded)

XV. Corrected analytical solution of the generalized Woods-Saxon potential for arbitrary l states
BAYRAK O., Aciksoz E.
PHYSICA SCRIPTA, vol.90, no.1, 2015 (SCI-Expanded)

XVI. Effect of external fields on the energies of hydrogenic donor with the anharmonic confinement potential
Aciksoz E., BAYRAK O., SOYLU A.
PHYSICA B-CONDENSED MATTER, vol.456, pp.339-343, 2015 (SCI-Expanded)

XVII. Bound states of the Dirac equation for the generalized Woods-Saxon potential in pseudospin and spin symmetry limits
CANDEMIR N., Bayrak O.
MODERN PHYSICS LETTERS A, vol.29, no.35, 2014 (SCI-Expanded)

XVIII. Massive Dirac equation in asymmetric Hulthen potential
Candemir N., BAYRAK O.
JOURNAL OF MATHEMATICAL PHYSICS, vol.54, no.4, 2013 (SCI-Expanded)

XIX. Role of the cluster deformations in explaining the exotic decay half-lives
Soylu A., SERT Y., BAYRAK O., BOZTOSUN İ.
EUROPEAN PHYSICAL JOURNAL A, vol.48, no.9, 2012 (SCI-Expanded)

XX. Effect of the velocity-dependent potentials on the energy eigenvalues of the Morse potential
Soylu A., BAYRAK O., BOZTOSUN İ.
CENTRAL EUROPEAN JOURNAL OF PHYSICS, vol.10, no.4, pp.953-959, 2012 (SCI-Expanded)

XXI. RADIAL SENSITIVITY OF THE ELASTIC SCATTERING AROUND THE COULOMB BARRIER ENERGIES FOR WEAKLY-BOUND AND HALO NUCLEI
SERT Y., CANER T., BAYRAK O., BOZTOSUN İ.
MODERN PHYSICS LETTERS A, vol.27, no.21, 2012 (SCI-Expanded)

XXII. Supersymmetric solution of Schrodinger equation by using the asymptotic iteration method
KOÇAK G., BAYRAK O., BOZTOSUN İ.
ANNALEN DER PHYSIK, vol.524, no.6-7, pp.353-359, 2012 (SCI-Expanded)

XXIII. Effect of nuclear deformation on alpha-decay half-lives
ÇOBAN A. Y., BAYRAK O., Soylu A., BOZTOSUN İ.
PHYSICAL REVIEW C, vol.85, no.4, 2012 (SCI-Expanded)

XXIV. Phase shift analysis of the He-6+Pb-208 and the He-6+Au-197 systems
BAYRAK O., BOZTOSUN İ.
CENTRAL EUROPEAN JOURNAL OF PHYSICS, vol.10, no.1, pp.109-115, 2012 (SCI-Expanded)

XXV. The energy eigenvalues of the Kratzer potential in the presence of a magnetic field
Aygun M., BAYRAK O., BOZTOSUN İ., ŞAHİN Y.
EUROPEAN PHYSICAL JOURNAL D, vol.66, no.2, 2012 (SCI-Expanded)

XXVI. Effect of the Velocity-Dependent Potentials on the Bound State Energy Eigenvalues
BAYRAK O., Soylu A., BOZTOSUN İ.
CHINESE PHYSICS LETTERS, vol.28, no.4, 2011 (SCI-Expanded)

XXVII. Semiclassical description of the He-6+C-12 elastic scattering
BAYRAK O., BOZTOSUN İ.
PHYSICS OF ATOMIC NUCLEI, vol.74, no.1, pp.13-18, 2011 (SCI-Expanded)

XXVIII. The relativistic treatment of spin-0 particles under the rotating Morse oscillator
BAYRAK O., Soylu A., BOZTOSUN İ.
JOURNAL OF MATHEMATICAL PHYSICS, vol.51, no.11, 2010 (SCI-Expanded)

XXIX. Analytical solution of the Schrodinger equation for Makarov potential with any l angular momentum
Bayrak O., Karakoc M., Boztosun I., Sever R.
INTERNATIONAL JOURNAL OF THEORETICAL PHYSICS, vol.47, no.11, pp.3005-3014, 2008 (SCI-Expanded)

XXX. **Exact solutions of Klein-Gordon equation with scalar and vector Rosen-Morse-type potentials**
Soylu A., BAYRAK O., Boztosun I.
CHINESE PHYSICS LETTERS, vol.25, no.8, pp.2754-2757, 2008 (SCI-Expanded)

XXXI. **Exact solutions of Klein-Gordon equation with exponential scalar and vector potentials**
Taskin F., Boztosun I., BAYRAK O.
INTERNATIONAL JOURNAL OF THEORETICAL PHYSICS, vol.47, no.6, pp.1612-1617, 2008 (SCI-Expanded)

XXXII. **kappa state solutions of the Dirac equation for the Eckart potential with pseudospin and spin symmetry**
Soylu A., BAYRAK O., Boztosun I.
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.41, no.6, 2008 (SCI-Expanded)

XXXIII. **Arbitrary l-state solution of the Hellmann potential**
KOÇAK G., BAYRAK O., Boztosun I.
JOURNAL OF THEORETICAL & COMPUTATIONAL CHEMISTRY, vol.6, no.4, pp.893-903, 2007 (SCI-Expanded)

XXXIV. **An alternative accurate solution of the exponential cosine screened Coulomb potential**
Bayrak O., Boztosun I.
INTERNATIONAL JOURNAL OF MODERN PHYSICS C, vol.18, no.9, pp.1443-1451, 2007 (SCI-Expanded)

XXXV. **The pseudospin symmetric solution of the Morse potential for any kappa state**
BAYRAK O., Boztosun I.
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.40, no.36, pp.11119-11127, 2007 (SCI-Expanded)

XXXVI. **An approximate solution of Dirac-Hulthen problem with pseudospin and spin symmetry for any kappa state**
Soylu A., Bayrak O., Boztosun I.
JOURNAL OF MATHEMATICAL PHYSICS, vol.48, no.8, 2007 (SCI-Expanded)

XXXVII. **Bound state solutions of the Hulthen potential by using the asymptotic iteration method**
Bayrak O., Boztosun I.
PHYSICA SCRIPTA, vol.76, no.1, pp.92-96, 2007 (SCI-Expanded)

XXXVIII. **Application of the asymptotic iteration method to the exponential cosine screened coulomb potential**
Bayrak O., Boztosun I.
INTERNATIONAL JOURNAL OF QUANTUM CHEMISTRY, vol.107, no.5, pp.1040-1045, 2007 (SCI-Expanded)

XXXIX. **Exact analytical solutions to the Kratzer potential by the asymptotic iteration method**
Bayrak O., Boztosun I., Ciftci H.
INTERNATIONAL JOURNAL OF QUANTUM CHEMISTRY, vol.107, no.3, pp.540-544, 2007 (SCI-Expanded)

XL. **Solution of the radial Schrodinger equation for the potential family V(r)=(A)/(r2)-(B)(/r)+Cr-kappa using the asymptotic iteration method**
Aygun M., Bayrak O., Boztosun I.
JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS, vol.40, no.3, pp.537-544, 2007 (SCI-Expanded)

XLI. **Any l-state solutions of the Hulthen potential by the asymptotic iteration method**
Bayrak O., Kocak G., Boztosun I.
JOURNAL OF PHYSICS A-MATHEMATICAL AND GENERAL, vol.39, no.37, pp.11521-11529, 2006 (SCI-Expanded)

XLII. **The energy eigenvalues of the two dimensional hydrogen atom in a magnetic field**
Soylut A., Bayrak O., Boztosun I.
INTERNATIONAL JOURNAL OF MODERN PHYSICS E, vol.15, no.6, pp.1263-1271, 2006 (SCI-Expanded)

XLIII. **Arbitrary l-state solutions of the rotating Morse potential by the asymptotic iteration method**
Bayrak O., Boztosun I.
JOURNAL OF PHYSICS A-MATHEMATICAL AND GENERAL, vol.39, no.22, pp.6955-6963, 2006 (SCI-Expanded)

XLIV. **The examination of the C-12+Mg-24 elastic scattering around the Coulomb barrier**
Boztosun I., Dagdemir Y., Bayrak O.
PHYSICS OF ATOMIC NUCLEI, vol.68, no.7, pp.1153-1159, 2005 (SCI-Expanded)

XLV. **A comparative study of the C-12+Mg-24 system with deep and shallow potentials**

Boztosun I., Bayrak O., Dagdemir Y.

INTERNATIONAL JOURNAL OF MODERN PHYSICS E-NUCLEAR PHYSICS, vol.14, no.4, pp.663-673, 2005 (SCI-Expanded)

Articles Published in Other Journals

I. **Elastic scattering analysis of 12C24Mg by WKB method**
BAYRAK O.
TURKISH JOURNAL OF PHYSICS, vol.41, pp.1, 2017 (Scopus)

II. **Microscopic Analysis of Elastic Scattering of 7Be 9Be, 10B, 12C, 14N, 27Al, 58Ni and 208Pb Systems,**
AYGÜN M., BAYRAK O., AYGÜN Z.
Quantum Physics Lettters, 2017 (Peer-Reviewed Journal)

III. **Elastic scattering analysis of C-12+Mg-24 by WKB method**
BAYRAK O.
TURKISH JOURNAL OF PHYSICS, vol.41, no.6, pp.520-525, 2017 (ESCI)

Refereed Congress / Symposium Publications in Proceedings

I. **Non-relativistic solutions of the generalized symmetric Woods-Saxon potential**
LÜTFÜOĞLU B. C., Akdeniz F., BAYRAK O.
VII Conference on Quantum Foundations, Cordoba, Argentina, 28 November - 01 December 2017

II. **Non relativistic solutions of the generalized symmetric Woods-Saxon potential**
LÜTFÜOĞLU B. C., Akdeniz F., BAYRAK O.
VII Conference on Quantum Foundations: 90 years of Uncertainity, Cordoba, Argentina, 29 November - 01 December 2017, vol.1, no.1, pp.8

III. **Non relativistic solutions of the generalized symmetric Woods-Saxon potential**
LÜTFÜOĞLU B. C., Akdeniz F., BAYRAK O.
VII Conference on Quantum Foundations: 90 years of Uncertainity, Cordoba, Argentina, 29 November - 01 December 2017, vol.1, no.1, pp.8

IV. **Cluster Model Calculations for 44Ti**
koyuncu f., SOYLU A., BAYRAK O.
IX. INTERNATIONAL WORKSHOP ONNUCLEAR STRUCTURE PROPERTIES, 1 - 03 September 2016

V. **Analytical Solution of Schrödinger equation for generalized symmetric Woods-Saxon potential: Scattering, bound and quasi-bound states.**
LÜTFÜOĞLU B. C., Akdeniz F., BAYRAK O.
ICQSA 2016, Eskişehir, Turkey, 25 - 27 May 2016, pp.120

VI. **The influence of nuclear deformations on the exotic cluster decay half-lives**
SOYLU A., BAYRAK O., EVLICE S.
1st NUBA International Conference on Nuclear Physics and Astrophysics, Antalya, Turkey, 14 - 21 September 2014, vol.590

VII. **Analytical solution of the Morse and the Hulthen potentials by using asymptotic iteration method**
BAYRAK O., Boztosun I.
6th International Conference of the Balkan-Physical-Union, İstanbul, Turkey, 22 - 26 August 2006, vol.899, pp.353-354

VIII. **12C+24Mg Sisteminin Mikroskobik ve Fenomonolojik Modellerle İncelenmesi**
BAYRAK O., BOZTOSUN İ., DAĞDEMİR Y.
Türk Fizik Derneği 22. Uluslararası Fizik Kongresi, Turkey, 14 - 17 September 2004

IX. **12C+24Mg Sistemi: Derin ve Sığ potansiyeller Arasındaki Simetri**
BAYRAK O., BOZTOSUN İ., DAĞDEMİR Y.

VIII. Ulusal Nükleer Bilimler ve Teknolojileri Kongresi, Turkey, 15 - 17 October 2003

Supported Projects

BAYRAK O., Project Supported by Higher Education Institutions, Nükleer Küme Bozunum Mekanizmaları için Morse Potansiyeli, 2019 - 2024

BAYRAK O., AÇIKSÖZ E., BOZTOSUN İ., Project Supported by Higher Education Institutions, Exact Analytical Solution of the KleinGordon Equation in the Generalized Woods-Saxon Potential, 2016 - 2019

BAYRAK O., AÇIKSÖZ E., Project Supported by Higher Education Institutions, Bound states of the Dirac Equation for the generalized WoodsSaxon potential in pseudospin and spin symmetry limits, 2015 - 2018

BAYRAK O., AÇIKSÖZ E., Project Supported by Higher Education Institutions, alphaalpha folding cluster model for alpharadioactivity, 2015 - 2018

LÜTFÜOĞLU B. C., BAYRAK O., IKOT A. N., Project Supported by Higher Education Institutions, Klein-Gordon equation particles in exponential-type molecule potentials and their thermodynamic properties in D dimensions, 2017 - 2017

Bayrak O., Project Supported by Higher Education Institutions, Alfa Kümelenme Potansiyeli Kullanılarak 24Mg Çekirdeğinin Nükleer Yapı ve Rezonans Gözlenirlerinin İncelenmesi, 2015 - 2016

Bayrak O., TUBITAK Project, Ağır Çekirdeklerin Alfa Bozunum Mekanizmalarının İncelenmesi, 2011 - 2012

Bayrak O., TUBITAK Project, Nükleer Fizik ve Astrofizikteki Reaksiyon Gözlenebilirlerine Transfer ve Quasi Elastik Reaksiyonların Etkisi, 2007 - 2009

Bayrak O., TUBITAK Project, Nükleer Kümelenme Nükleer Yapı ve Reaksiyon Formalizmine Uygulanması, 2006 - 2008

Bayrak O., Project Supported by Higher Education Institutions, Hafif Ağır Çekirdek Reaksiyonlarının Açıklanması İçin Yeni Bir Potansiyel Yaklaşımı, 2006 - 2007

Scientific Refereeing

Scientific Reports , SCI Journal, February 2016

Physica B , SCI Journal, February 2016

Physics Research International , SCI Journal, February 2016

Zeitschrift fur Naturforschung A , SCI Journal, February 2016

ISRN Mathematical Physics , SCI Journal, February 2015

International Journal of Theoretical Physics , SCI Journal, February 2015

Indian Journal of Physics , SCI Journal, February 2015

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Bitlis Eren Universıty Journal of Science And Technology , National Scientific Refreed Journal, February 2014

Journal of Theoretical and Applied Physics , SCI Journal, February 2014

Advances in High Energy Physics , SCI Journal, February 2013

The journal Few-Body Systems , SCI Journal, February 2013

Central European Journal of Physics , SCI Journal, February 2013

Physica Scripta , SCI Journal, February 2012

Metrics

Publication: 57
Citation (WoS): 1145
Citation (Scopus): 1410
H-Index (WoS): 17
H-Index (Scopus): 18

Scholarships

2218-Yurt İçi Doktora Sonrası Burs Programı , TUBITAK, 2010 - 2011