Prof. ŞENGÜL KURU

Personal Information

Office Phone: +90 312 216 8908 Extension: 8908
Fax Phone: +90 312 216 8900
Email: kuru@science.ankara.edu.tr
Web: https://avesis.ankara.edu.tr/kuru

International Researcher IDs
ORCID: 0000-0001-6380-280X
Publons / Web Of Science ResearcherID: R-6532-2018
ScopusID: 13612536100
Yoksis Researcher ID: 36262

Education Information

Doctorate, Ankara University, Fen Bilimleri Enstitüsü, Fizik (Dr), Turkey 1998 - 2004
Postgraduate, Ankara University, Fen Bilimleri Enstitüsü, Fizik (Yl) (Tezli), Turkey 1996 - 1998
Undergraduate, Ankara University, Fen Fakültesi, Fizik Bölümü, Turkey 1992 - 1996

Dissertations

Doctorate, Çizgisel ve çizgisel olmayan integrallenebilir sistemler, darboux dönüşümleri ve süpersimetri, Ankara
University, Fen Bilimleri Enstitüsü, Fizik (Dr), 2004
Postgraduate, Kuantum mekaniğinde saçılma problemlerine grup kuramsal yaklaşımlar, Ankara University, Fen Bilimleri
Enstitüsü, Fizik (Yl) (Tezli), 1998

Research Areas

Natural Sciences

Courses

Matematiksel Fizik I, Undergraduate, 2022 - 2023, 2021 - 2022
OZEL KONULAR, Undergraduate, 2022 - 2023, 2021 - 2022, 2020 - 2021, 2017 - 2018, 2014 - 2015, 2013 - 2014, 2012 -
2013, 2011 - 2012, 2010 - 2011, 2009 - 2010
TEORİK MEKANİK, Undergraduate, 2022 - 2023, 2011 - 2012, 2010 - 2011, 2009 - 2010
Kuantum Optiği, Undergraduate, 2022 - 2023
DALGALAR VE OPTİK, Undergraduate, 2020 - 2021, 2019 - 2020, 2018 - 2019, 2017 - 2018, 2014 - 2015, 2013 - 2014,
2012 - 2013, 2011 - 2012
Matematiksel Fizik 2, Undergraduate, 2021 - 2022, 2020 - 2021
İLERİ KLASİK MEKANİK, Doctorate, 2020 - 2021, 2019 - 2020, 2018 - 2019, 2017 - 2018
KLASİK MEKANİK, Postgraduate, 2020 - 2021, 2019 - 2020, 2018 - 2019
FİZİK I, Undergraduate, 2018 - 2019, 2017 - 2018, 2010 - 2011
KLASİK MEKANİK I, Postgraduate, 2017 - 2018, 2015 - 2016, 2014 - 2015

Klasik Mekanik II, Postgraduate, 2014 - 2015
FİZİKTE DENEYSEL YONTEMLER, Postgraduate, 2012 - 2013, 2011 - 2012, 2010 - 2011
FİZİK II, Undergraduate, 2010 - 2011, 2009 - 2010
MEKANİK I LAB, Undergraduate, 2009 - 2010
MEKANİK II LAB, Undergraduate, 2009 - 2010

Advising Theses

Kuru Ş., Selimoğlu Ö., Design and realization of modulation transfer function measurement system with an off-axis parabolic mirror collimator and slanted edge method, Postgraduate, Y.Can(Student), Continues

Kuru Ş., Grafen ve grafen benzeri iki boyutlu Dirac malzemelerinde elektronların elektrostatik ve manyetik hapsi., Postgraduate, İ.BURAK(Student), 2023

KURU Ş., Design of direct-lit and edge-lit LCD backlight unit and comparison of optical properties, Postgraduate, G.KARADENİZ(Student), 2021

KURU Ş., İKİ BOYUTLU EĞRİ YÜZEYLERDE DIRAC-WEYL DENKLEMİ VE SÜPERSİMETRİK KUANTUM MEKANİĞİ UYGULAMALARI, Doctorate, D.DEMİR(Student), 2021

KURU Ş., Kuantum mekaniğinde bir boyutlu potansiyeller için saçılma problemleri ve süpersimetrik dönüşümler, Postgraduate, D.DEMİR(Student), 2016

KURU Ş., İki yönlü yanal etki algılayıcılı optik sistem tasarımı ve bu sistemin operasyonel kullanımı ile ışıma kaynaklarının konumlarının bulunması, Postgraduate, H.SOYKUVVET(Student), 2015

KURU Ş., Dış manyetik alan varlığında iki boyutlu yüzeylerde kütlesiz dırac parçacıkları, Postgraduate, D.ÇEVİK(Student), 2015

KURU Ş., Stokastik yarı klasik model ile çekirdek kaynaşma reaksiyonlarının incelenmesi, Postgraduate, G.NARİN(Student), 2013

KURU Ş., Bir ve iki parametreli pöschl-teller potansiyellerinin dinamik cebileri, Postgraduate, E.AŞLAR(Student), 2013

KURU Ş., Bir boyutta çarpanlarına ayrılabilen bazı sistemlerin spektrum üreten cebirleri: Klasik ve kuantum mekaniksel inceleme, Postgraduate, E.ŞİMŞEK(Student), 2012

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Electric and magnetic waveguides in graphene: quantum and classical**
Barranco D., KURU Ş., Negro J.
Physica Scripta, vol.99, no.10, 2024 (SCI-Expanded)

II. **Unusual isospectral factorizations of shape invariant Hamiltonians with Scarf II potential**
Acar Y. C., Acevedo L., Kuru Ş.
PHYSICA SCRIPTA, vol.98, pp.1-9, 2023 (SCI-Expanded)

III. **Quantum, classical symmetries, and action-angle variables by factorization of superintegrable systems**
Kuru Ş., Negro J., Salamanca S.
EPJ Plus, vol.138, pp.1-18, 2023 (SCI-Expanded)

IV. **SUSY partners and S-matrix poles of the one-dimensional Rosen–Morse II potential**
San Millán C., Gadella M., KURU Ş., Negro J.
European Physical Journal Plus, vol.138, no.9, 2023 (SCI-Expanded)

V. **Graphene Dirac fermions in symmetric electric and magnetic fields: the case of an electric square well**
Ates I. B., Kuru Ş., Negro J.
PHYSICA SCRIPTA, vol.98, no.1, 2023 (SCI-Expanded)

VI. **Massive and massless two-dimensional Dirac particles in electric quantum dots**
Kuru Ş., Negro J., Nieto L. M., Sourrouille L.

PHYSICA E-LOW-DIMENSIONAL SYSTEMS & NANOSTRUCTURES, vol.142, 2022 (SCI-Expanded)

VII. **Dirac fermions in armchair graphene nanoribbons trapped by electric quantum dots**
Jakubsky V., KURU Ş., Negro J.
PHYSICAL REVIEW B, vol.105, no.16, 2022 (SCI-Expanded)

VIII. **Dirac-like Hamiltonians associated to Schrodinger factorizations**
Kizilirmak D. D., KURU Ş., Negro J.
EUROPEAN PHYSICAL JOURNAL PLUS, vol.136, no.6, 2021 (SCI-Expanded)

IX. **The solutions of Dirac equation on the hyperboloid under perpendicular magnetic fields**
Kizilirmak D. D., KURU Ş.
PHYSICA SCRIPTA, vol.96, no.2, 2021 (SCI-Expanded)

X. **The general Racah algebra as the symmetry algebra of generic systems on pseudo-spheres**
KURU Ş., Marquette I., Negro J.
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.53, no.40, 2020 (SCI-Expanded)

XI. **Redundant poles of the S-matrix for the one-dimensional Morse potential**
Gadella M., Hernandez-Ortega A., Kuru Ş., Negro J.
European Physical Journal Plus, vol.135, no.10, 2020 (SCI-Expanded)

XII. **Dirac-Weyl equation on a hyperbolic graphene surface under magnetic fields**
Kizilirmak D. D., KURU Ş., Negro J.
PHYSICA E-LOW-DIMENSIONAL SYSTEMS & NANOSTRUCTURES, vol.118, 2020 (SCI-Expanded)

XIII. **Classical ladder functions for Rosen-Morse and curved Kepler-Coulomb systems**
Delisle-Doray L., Hussin V., KURU Ş., Negro J.
ANNALS OF PHYSICS, vol.405, pp.69-82, 2019 (SCI-Expanded)

XIV. **Confinement of Dirac electrons in graphene magnetic quantum dots**
KURU Ş., Negro J., Sourrouille L.
JOURNAL OF PHYSICS-CONDENSED MATTER, vol.30, no.36, 2018 (SCI-Expanded)

XV. **The Perlick system type I: From the algebra of symmetries to the geometry of the trajectories**
KURU Ş., Negro J., Ragnisco O.
PHYSICS LETTERS A, vol.381, no.39, pp.3355-3363, 2017 (SCI-Expanded)

XVI. **Superintegrability of the Fock-Darwin system**
Drigho-Filho E., KURU Ş., Negro J., Nieto L. M.
ANNALS OF PHYSICS, vol.383, pp.101-119, 2017 (SCI-Expanded)

XVII. **Heisenberg-type higher order symmetries of superintegrable systems separable in Cartesian coordinates**
Gungor F., KURU Ş., Negro J., Nieto L. M.
NONLINEARITY, vol.30, no.5, pp.1788-1808, 2017 (SCI-Expanded)

XVIII. **hyperbolic step potential: Anti-bound states, SUSY partners and Wigner time delays**
Gadella M., KURU Ş., Negro J.
ANNALS OF PHYSICS, vol.379, pp.86-101, 2017 (SCI-Expanded)

XIX. **Factorization approach to superintegrable systems: Formalism and applications**
Ballesteros A., Herranz F. J., KURU Ş., Negro J.
PHYSICS OF ATOMIC NUCLEI, vol.80, no.2, pp.389-396, 2017 (SCI-Expanded)

XX. **The anisotropic oscillator on curved spaces: A new exactly solvable model**
Ballesteros A., Herranz F. J., KURU Ş., Negro J.
ANNALS OF PHYSICS, vol.373, pp.399-423, 2016 (SCI-Expanded)

XXI. **Resonances and antibound states for the Poschl-Teller potential: Ladder operators and SUSY partners**
Cevik D., Gadella M., KURU Ş., Negro J.
PHYSICS LETTERS A, vol.380, no.18-19, pp.1600-1609, 2016 (SCI-Expanded)

XXII. **Degeneracy carbon nanotubes under transverse magnetic delta-fields**
KURU Ş., Negro J., Tristao S.
JOURNAL OF PHYSICS-CONDENSED MATTER, vol.27, no.28, 2015 (SCI-Expanded)

XXIII. **Superintegrable Lissajous systems on the sphere**
Calzada J. A., KURU Ş., Negro J.
EUROPEAN PHYSICAL JOURNAL PLUS, vol.129, no.8, 2014 (SCI-Expanded)

XXIV. **Carbon nanotubes in an inhomogeneous transverse magnetic field: exactly solvable model**
Jakubsky V., KURU Ş., Negro J.
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.47, no.11, 2014 (SCI-Expanded)

XXV. **A unified approach to quantum and classical TTW systems based on factorizations**
Celeghini E., KURU Ş., Negro J., del Olmo M. A.
ANNALS OF PHYSICS, vol.332, pp.27-37, 2013 (SCI-Expanded)

XXVI. **Supersymmetry in spherical molecules and fullerenes under perpendicular magnetic fields**
Jakubsky V., KURU Ş., Negro J., Tristao S.
JOURNAL OF PHYSICS-CONDENSED MATTER, vol.25, no.16, 2013 (SCI-Expanded)

XXVII. **Action-angle variables, ladder operators and coherent states**
Campoamor-Stursberg R., Gadella M., KURU Ş., Negro J.
PHYSICS LETTERS A, vol.376, no.37, pp.2515-2521, 2012 (SCI-Expanded)

XXVIII. **Dynamical algebras of general two-parametric Poschl-Teller Hamiltonians**
Calzada J. A., KURU Ş., Negro J., del Olmo M. A.
ANNALS OF PHYSICS, vol.327, no.3, pp.808-822, 2012 (SCI-Expanded)

XXIX. **Classical spectrum generating algebra of the Kepler-Coulomb system and action-angle variables**
KURU Ş., Negro J.
PHYSICS LETTERS A, vol.376, no.4, pp.260-264, 2012 (SCI-Expanded)

XXX. **Special Issue in Honour of Prof. M. Gadella with Occasion of His 60th Birthday**
Alvarez-Sanchez J. J., Gomez-Cubillo F., KURU Ş., Negro J., Nieto L. M.
INTERNATIONAL JOURNAL OF THEORETICAL PHYSICS, vol.50, no.7, pp.1991-1992, 2011 (SCI-Expanded)

XXXI. **Intertwining Symmetry Algebras of Quantum Superintegrable Systems on Constant Curvature Spaces**
Calzada J. A., KURU Ş., Negro J., del Olmo M. A.
INTERNATIONAL JOURNAL OF THEORETICAL PHYSICS, vol.50, no.7, pp.2067-2073, 2011 (SCI-Expanded)

XXXII. **Solutions of a Class of Duffing Oscillators with Variable Coefficients**
Estevez P. G., KURU Ş., Negro J., Nieto L. M.
INTERNATIONAL JOURNAL OF THEORETICAL PHYSICS, vol.50, no.7, pp.2046-2056, 2011 (SCI-Expanded)

XXXIII. **Dynamical algebras for Poschl-Teller Hamiltonian hierarchies**
KURU Ş., Negro J.
ANNALS OF PHYSICS, vol.324, no.12, pp.2548-2560, 2009 (SCI-Expanded)

XXXIV. **Exact analytic solutions for a Dirac electron moving in graphene under magnetic fields**
KURU Ş., Negro J., Nieto L. M.
JOURNAL OF PHYSICS-CONDENSED MATTER, vol.21, no.45, 2009 (SCI-Expanded)

XXXV. **Compactons and kink-like solutions of BBM-like equations by means of factorization**
KURU Ş.
CHAOS SOLITONS & FRACTALS, vol.42, no.1, pp.626-633, 2009 (SCI-Expanded)

XXXVI. **Traveling wave solutions of the BBM-like equations**
KURU Ş.
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.42, no.37, 2009 (SCI-Expanded)

XXXVII. **Travelling wave solutions of the generalized Benjamin-Bona-Mahony equation**
Estevez P. G., KURU Ş., Negro J., Nieto L. M.
CHAOS SOLITONS & FRACTALS, vol.40, no.4, pp.2031-2040, 2009 (SCI-Expanded)

XXXVIII. **Intertwining symmetry algebras of quantum superintegrable systems on the hyperboloid**
Calzada J. A., KURU Ş., Negro J., del Olmo M. A.
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.41, no.25, 2008 (SCI-Expanded)

XXXIX. **Factorizations of one-dimensional classical systems**
KURU Ş., Negro J.
ANNALS OF PHYSICS, vol.323, no.2, pp.413-431, 2008 (SCI-Expanded)

XL. **Classical motion and coherent states for Poschl-Teller potentials**
Cruz S. Y. C., KURU Ş., Negro J.
PHYSICS LETTERS A, vol.372, no.9, pp.1391-1405, 2008 (SCI-Expanded)

XLI. **Factorization of a class of almost linear second-order differential equations**
Estevez P. G., KURU Ş., Negro J., Nieto L. M.
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.40, no.32, pp.9819-9824, 2007 (SCI-Expanded)

XLII. **Self-adjoint Hamiltonians with a mass jump: General matching conditions**
Gadella M., KURU Ş., Negro J.
PHYSICS LETTERS A, vol.362, no.4, pp.265-268, 2007 (SCI-Expanded)

XLIII. **A study of the bound states for square potential wells with position-dependent mass**
Ganguly A., KURU Ş., Negro J., Nieto L. M.
PHYSICS LETTERS A, vol.360, no.2, pp.228-233, 2006 (SCI-Expanded)

XLIV. **Travelling wave solutions of two-dimensional Korteweg-de Vries-Burgers and Kadomtsev-Petviashvili equations**
Estevez P. G., KURU Ş., Negro J., Nieto L. M.
JOURNAL OF PHYSICS A-MATHEMATICAL AND GENERAL, vol.39, no.37, pp.11441-11452, 2006 (SCI-Expanded)

XLV. **Generalized Jaynes-Cummings Hamiltonians by shape-invariant hierarchies and their SUSY partners**
Hussin V., KURU Ş., Negro J.
JOURNAL OF PHYSICS A-MATHEMATICAL AND GENERAL, vol.39, no.36, pp.11301-11311, 2006 (SCI-Expanded)

XLVI. **SUSY approach to Pauli Hamiltonians with an axial symmetry**
Ioffe M., KURU Ş., Negro J., Nieto L.
JOURNAL OF PHYSICS A-MATHEMATICAL AND GENERAL, vol.39, no.22, pp.6987-7001, 2006 (SCI-Expanded)

XLVII. **Supersymmetric analysis of a spin Hamiltonian model**
Demircioglu B., Ocak S., KURU Ş.
PHYSICS LETTERS A, vol.353, no.1, pp.34-39, 2006 (SCI-Expanded)

XLVIII. **Two families of superintegrable and isospectral potentials in two dimensions**
Demircioglu B., KURU Ş., Onder M., Vercin A.
JOURNAL OF MATHEMATICAL PHYSICS, vol.43, no.5, pp.2133-2150, 2002 (SCI-Expanded)

XLIX. **Intertwined isospectral potentials in an arbitrary dimension**
KURU Ş., TEĞMEN A., Vercin A.
JOURNAL OF MATHEMATICAL PHYSICS, vol.42, no.8, pp.3344-3360, 2001 (SCI-Expanded)

Articles Published in Other Journals

I. **Spectrum generating algebras of classical systems the Kepler Coulomb potential**
KURU Ş., Negro J.
J. Phys.: Conf. Ser., vol.343, no.343, pp.12063, 2012 (Peer-Reviewed Journal)

II. **Intertwining of quantum superintegrable systems on the hyperboloid**
Calzada J. A., KURU Ş., Negro J., Del Olmo M.
J. Phys. Conference Series, vol.128, no.128, pp.12026, 2008 (Peer-Reviewed Journal)

III. **Bağlaştırım yöntemi ve çift Sinh Gordon potansiyelinin süpersimetrik eşleri**
ÇAĞATAY B., KURU Ş.
Balıkesir Universitesi Fen Bilimleri Enstitüsü Dergisi, vol.9, no.2, pp.63-71, 2007 (Peer-Reviewed Journal)

Refereed Congress / Symposium Publications in Proceedings

I. **THE SOLUTIONS OF DIRAC EQUATION ON THE HYPERBOLIC SURFACE UNDER PERPENDICULAR MAGNETIC FIELD**
DEMİR KIZILIRMAK D., KURU Ş., TÜRK M., ÖÇAL Ş., ÖZSOY B., VAROL R.

Turkish Physical Society–36th International Physics Congress (TPS-36), Turkey, 1 - 05 September 2020

II. **Supersymmetric partners of the hyperbolic step potential by using anti-bound states**
KURU Ş., Negro J.
The 32nd International Colloquium on Group Theoretical Methods in Physics (Group32), 9 - 13 July 2018

III. **Integrals of motion and trajectories for the Perlick system I: an algebraic approach**
Ragnisco O., KURU Ş., Negro J.
25th International Conference on Integrable Systems and Quantum Symmetries (ISQS), Prague, Czech Republic, 6 - 10 June 2017, vol.965

IV. **An Optical System Design with Duo-Lateral Effect Detector and Finding Position of Light Sources with Operational Utilisation of This System**
Soykuvvet H., KURU Ş.
Conference on Advanced Optics for Defense Applications - UV through LWIR III, Florida, United States Of America, 15 - 16 April 2018, vol.10627

V. **'Spectrum generating algebras' of classical systems: the Kepler-Coulomb potential**
KURU Ş., Negro J.
7th International Conference on Quantum Theory and Symmetries (QTS), Prague, Czech Republic, 7 - 13 August 2011, vol.343

VI. **Dynamical algebras of general Poschl-Teller hierarchies**
Calzada J. A., KURU Ş., Negro J., del Olmo M. A.
7th International Conference on Quantum Theory and Symmetries (QTS), Prague, Czech Republic, 7 - 13 August 2011, vol.343

VII. **Intertwining algebras of quantum superintegrable systems on the hyperboloid**
Calzada J. A., KURU Ş., Negro J., del Olmo M. A.
5th International Symposium on Quantum Theory and Symmetries, Valladolid, Spain, 22 - 28 July 2007, vol.128

Supported Projects

Kuru Ş., Nieto L. M., Negro J., EU Supported Other Project, Secure quantum communications in Castilla y Leon, 2021 - 2025

Kuru Ş., Nieto L. M., Negro J., Project Supported by Public Organizations in Other Countries, New Developments in Mathematical Modelling of Quantum Phenomena, 2021 - 2024

Kuru Ş., Project Supported by Higher Education Institutions, İki boyutlu eğri yüzeylerde Dirac-Weyl denklemive süpersimetrik kuantum mekaniği uygulamalar, 2020 - 2021

KURU Ş., Other International Funding Programs, New challenges in superintegrable and supersymmetric dynamical systems, 2015 - 2019

KURU Ş., Other International Funding Programs, Algebraic Developments in Quantum Theories, 2009 - 2012

KURU Ş., Other International Funding Programs, New Challenges in Mathematical Physics, 2008 - 2011

Activities in Scientific Journals

Communications Faculty of Sciences University of Ankara Series A2-A3: Physical Sciences and Engineering, Editor, 2020 - Continues

Metrics

Publication: 59
Citation (WoS): 775
Citation (Scopus): 771

H-Index (WoS): 16
H-Index (Scopus): 15