

## Prof. MUHARREM KIRAK

### Personal Information

**Email:** muharrem.kirak@bozok.edu.tr

**Web:** <https://avesis.bozok.edu.tr/muharrem.kirak>

### International Researcher IDs

ORCID: 0000-0003-3208-2242

Yoksis Researcher ID: 26847

### Education Information

Doctorate, Erciyes University, Fen Bilimleri Enstitüsü, Fizik (Dr), Turkey 2007 - 2011

Postgraduate, Erciyes University, Fen Bilimleri Enstitüsü, Fizik (YI) (Tezli), Turkey 2005 - 2007

Undergraduate, Erciyes University, Fen-Edebiyat Fakültesi, Fizik Pr., Turkey 2000 - 2005

### Dissertations

Doctorate, Küresel kuantum noktalarında dış elektrik ve manyetik alanda hidrojenik safsızlık problemi, Erciyes University, Fen Bilimleri Enstitüsü, Fizik (Dr), 2011

Postgraduate, Kinetik spin-3/2 Ising modelinde dinamik dipol ve kuadrupol faz geçişleri, Erciyes University, Fen Bilimleri Enstitüsü, Fizik (YI) (Tezli), 2007

### Research Areas

Intensive Article 2: Electronic Structure, Electric, Magnetic and Optical Properties

### Academic Titles / Tasks

Professor, Yozgat Bozok University, Eğitim Fakültesi, Matematik Ve Fen Bilimleri Eğitimi, 2023 - Continues

Associate Professor, Yozgat Bozok University, Eğitim Fakültesi, Matematik Ve Fen Bilimleri Eğitimi, 2018 - 2023

Assistant Professor, Yozgat Bozok University, Eğitim Fakültesi, Temel Eğitim, 2013 - 2018

Assistant Professor, Yozgat Bozok University, Eğitim Fakültesi, Matematik Ve Fen Bilimleri Eğitimi, 2012 - 2013

Research Assistant, Yozgat Bozok University, Fen-Edebiyat Fakültesi, Fizik, 2007 - 2012

### Academic and Administrative Experience

Head of Department, Yozgat Bozok University, Eğitim Fakültesi, Matematik Ve Fen Bilimleri Eğitimi, 2020 - Continues

Head of Department, Yozgat Bozok University, Eğitim Fakültesi, Temel Eğitim, 2018 - 2020

Deputy Head of Department, Yozgat Bozok University, Eğitim Fakültesi, Matematik Ve Fen Bilimleri Eğitimi, 2013 - 2014

### Courses

FİZİK II, Undergraduate, 2018 - 2019, 2017 - 2018  
ÇEVREMİZDEKİ FİZİK, Undergraduate, 2018 - 2019  
GENEL FİZİK, Undergraduate, 2018 - 2019, 2014 - 2015  
GENEL FİZİK LAB. III, Undergraduate, 2018 - 2019, 2017 - 2018, 2014 - 2015  
OKUL DENEYİMİ, Undergraduate, 2018 - 2019  
TOPLUMA HİZMET UYGULAMALARI, Undergraduate, 2018 - 2019, 2017 - 2018  
ÖĞRETMENLİK UYGULAMASI, Undergraduate, 2018 - 2019, 2017 - 2018  
FİZİK I, Undergraduate, 2018 - 2019, 2017 - 2018  
GENEL FİZİK III, Undergraduate, 2018 - 2019, 2017 - 2018, 2014 - 2015  
ARAŞTIRMA PROJESİ, Undergraduate, 2018 - 2019  
TEKNİK ELEKTRİK, Undergraduate, 2017 - 2018  
BİLGİSAYAR I, Undergraduate, 2017 - 2018, 2014 - 2015, 2013 - 2014  
MODERN FİZİĞE GİRİŞ, Undergraduate, 2017 - 2018, 2014 - 2015  
FİZİKTE YAYGIN KAVRAM YANILGILARI VE GİDERME YÖNTEMLERİ, Postgraduate, 2014 - 2015, 2013 - 2014  
BİLGİSAYAR II, Undergraduate, 2014 - 2015, 2013 - 2014  
GENEL FİZİK LAB. II, Undergraduate, 2014 - 2015, 2013 - 2014  
MESLEKİ İNGİLİZCE I, Postgraduate, 2013 - 2014  
FEN EĞİTİMİNDE FİZİK KONULARI VE KAVRAMLARI, Postgraduate, 2013 - 2014  
SEMİNER, Postgraduate, 2013 - 2014  
GENEL FİZİK LAB. I, Undergraduate, 2013 - 2014

## Advising Theses

KIRAK M., Asimetrik yarı parabolik kuantum kuyuların elektronik ve optik özellikleri, Postgraduate, A.SIRLI(Student), 2015

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **The nonlinear optical rectification and second harmonic generation of a single electron confined in a multilayer spherical quantum dot**  
Fakkahi A., Kirak M., Jaouane M., Sali A., Ed-Dahmouny A., El-Bakkari K., Arraoui R.  
Optical and Quantum Electronics, vol.55, no.5, 2023 (SCI-Expanded)
- II. **Effect of number of well and core radius on the binding energy and optical properties of multishell spherical quantum dot with parabolic potential**  
Kirak M.  
PHYSICA SCRIPTA, vol.98, no.6, pp.65804-65818, 2023 (SCI-Expanded)
- III. **The impact of the electric field on the photoionization cross section, polarizability, and donor impurity binding energy in multilayered spherical quantum dot**  
Kirak M.  
APPLIED PHYSICS A: MATERIALS SCIENCE AND PROCESSING, vol.129, no.3, pp.188-196, 2023 (SCI-Expanded)
- IV. **Effect of impurity position and electric field on the optical absorption coefficients and oscillator strength in spherical multilayer quantum dot**  
Fakkahi A., KIRAK M., Sali A.  
EUROPEAN PHYSICAL JOURNAL PLUS, vol.137, no.9, 2022 (SCI-Expanded)
- V. **Third harmonic generation of spherical multilayered quantum dot: effects of quantum confinement, impurity, electric and magnetic fields**  
KIRAK M., YILMAZ S.  
APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING, vol.128, no.5, 2022 (SCI-Expanded)
- VI. **Magnetic and thermodynamic properties of GaAs quantum dot confined by parabolic-inverse square**

**plus gaussian potential**

Kirak M.

JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, vol.536, 2021 (SCI-Expanded)

- VII. **Effects of electric and magnetic fields on the binding energy and second harmonic generation for on- and off-center donor impurities in spherical multilayer quantum dot**  
Kirak M.  
EUROPEAN PHYSICAL JOURNAL PLUS, vol.136, no.6, 2021 (SCI-Expanded)
- VIII. **Electronic and optical properties of double ring-shaped quantum dot**  
KIRAK M., YILMAZ S.  
JOURNAL OF NANOPHOTONICS, vol.14, no.1, 2020 (SCI-Expanded)
- IX. **An investigation on the effect of impurity position on the binding energy of quantum box under electric field with pressure and temperature**  
Yilmaz S., Kirak M.  
INTERNATIONAL JOURNAL OF MODERN PHYSICS B, vol.32, no.13, 2018 (SCI-Expanded)
- X. **Size-dependent electronic and optical properties in zinc-blende InGaN/GaN multilayer spherical quantum dot**  
Ortakaya S., Kirak M., GÜLDESTE A.  
JOURNAL OF NONLINEAR OPTICAL PHYSICS & MATERIALS, vol.26, no.3, 2017 (SCI-Expanded)
- XI. **Hydrostatic pressure and temperature effects on the binding energy and optical absorption of a multilayered quantum dot with a parabolic confinement**  
Ortakaya S., KIRAK M.  
CHINESE PHYSICS B, vol.25, no.12, 2016 (SCI-Expanded)
- XII. **Impurity position effects on the linear and nonlinear optical properties of the cubic quantum dot under an external electric field**  
KIRAK M., YILMAZ S.  
JOURNAL OF PHYSICS D-APPLIED PHYSICS, vol.48, no.32, 2015 (SCI-Expanded)
- XIII. **Binding Energies and Linear and Nonlinear Optical Properties of a Donor Impurity in a Three-Dimensional Quantum Pseudodot**  
KIRAK M., YILMAZ S.  
ZEITSCHRIFT FÜR NATURFORSCHUNG SECTION A-A JOURNAL OF PHYSICAL SCIENCES, vol.68, no.12, pp.744-750, 2013 (SCI-Expanded)
- XIV. **The effects of the hydrostatic pressure and temperature on binding energy and optical properties of a donor impurity in a spherical quantum dot under external electric field**  
Kirak M., Altinok Y., Yilmaz S.  
JOURNAL OF LUMINESCENCE, vol.136, pp.415-421, 2013 (SCI-Expanded)
- XV. **Nonlinear Optical Rectification and Oscillator Strength in a Spherical Quantum Dot with Parabolic Confinement in the Presence of the Electric Field**  
KIRAK M., YILMAZ S., TEMİZER Ü.  
JOURNAL OF NANOELECTRONICS AND OPTOELECTRONICS, vol.8, no.2, pp.165-169, 2013 (SCI-Expanded)
- XVI. **The electric field effects on the third-harmonic generation in spherical quantum dots with parabolic confinement**  
Kirak M., Altinok Y.  
EUROPEAN PHYSICAL JOURNAL B, vol.85, no.10, 2012 (SCI-Expanded)
- XVII. **The electric field effects on the binding energies and the nonlinear optical properties of a donor impurity in a spherical quantum dot**  
Kirak M., Yilmaz S., ŞAHİN M., Gencaslan M.  
JOURNAL OF APPLIED PHYSICS, vol.109, no.9, 2011 (SCI-Expanded)
- XVIII. **Effects of the Magnetic Field on the Linear and Nonlinear Optical Absorption Coefficients and the Refractive Index Changes in a Spherical Quantum Dot**  
KIRAK M., YILMAZ S., GENÇASLAN M.  
JOURNAL OF NANOELECTRONICS AND OPTOELECTRONICS, vol.5, no.3, pp.391-396, 2010 (SCI-Expanded)

- XIX. Dynamic Dipole and Quadrupole Phase Transitions in the Kinetic Metamagnetic Spin-3/2 Blume-Emery-Griffiths Model**  
Kirak M., Canko O., KESKİN M.  
ZEITSCHRIFT FUR NATURFORSCHUNG SECTION A-A JOURNAL OF PHYSICAL SCIENCES, vol.64, pp.185-199, 2009 (SCI-Expanded)
- XX. Phase diagrams of the kinetic metamagnetic spin-3/2 Blume-Capel model in an oscillating external field**  
Keskin M., Canko O., Kirak M.  
PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS, vol.244, no.10, pp.3775-3788, 2007 (SCI-Expanded)
- XXI. Dynamic phase transition in the kinetic spin-3/2 blume-emery-griffiths model: Phase diagram in the temperature and interaction parameters planes**  
Keskin M., Deviren B., Canko O., Kirak M.  
ACTA PHYSICA POLONICA B, vol.38, no.8, pp.2445-2457, 2007 (SCI-Expanded)
- XXII. Dynamic dipole and quadrupole phase transitions in the kinetic spin-3/2 model**  
Keskin M., Canko O., Kirak M.  
JOURNAL OF STATISTICAL PHYSICS, vol.127, no.2, pp.359-380, 2007 (SCI-Expanded)

### Articles Published in Other Journals

- I. Optical absorption coefficients of a single electron in a multilayer spherical quantum dot with a Kratzer-like confinement potential**  
Kirak M., Fakkahi A., Jaouane M., Khordad R., Sali A., Arraooi R., El-Bakkari K., Ed-Dahmouny A., Azmi H.  
Results in Optics, vol.13, pp.100553-100560, 2023 (Scopus)
- II. Basıncın ve Sıcaklığın Dış Elektrik Alan Altındaki Kübik Kuantum Noktasının Üçüncü Harmonik Üretimi Üzerine Etkisi**  
KIRAK M.  
Gümüşhane Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.9, no.1, pp.80-87, 2019 (Peer-Reviewed Journal)

### Supported Projects

YILMAZ S., KIRAK M., Project Supported by Higher Education Institutions, Dış Elektrik Alan ve Manyetik Alanın İkili Halka Şekli Kuantum Noktanın Elektronik ve Optik Özellikleri Üzerine Etkisi, 2019 - 2019

### Metrics

Publication: 32  
Citation (WoS): 344  
Citation (Scopus): 411  
H-Index (WoS): 9  
H-Index (Scopus): 10