Assoc. Prof. MUHAMMED SAYRAÇ

Personal Information

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Biography

Doç. Dr. Muhammed SAYRAÇ, akademik kariyerine Sivas Cumhuriyet Üniversitesi Fen Fakültesi Fizik Bölümü'nden mezun olarak başlamıştır. Yüksek lisansını 2013 yılında Amerika Birleşik Devletleri'nde (ABD) Texas A&M Üniversitesi'nde tamamlamış, 2017 yılında yine aynı üniversiteden aldığı doktora derecesi ile femtosaniye lazerler ve attosaniye lazer teknolojisi alanında uzmanlaşmıştır. Doktora çalışmaları, koherent (uyumlu) ultra-kısa optik lazer ışınlarının optimizasyonu üzerine yoğunlaşmıştır.

Dr. Sayraç, temel bilimler alanında, özellikle ultra-kısa lazer atımlarının üretilmesi ve lazer-madde etkileşimi konularında kapsamlı deneysel araştırmalar yürütmüştür. Yapılan deneysel çalışmalar, simülasyonlarla desteklenmiştir. Ulusal ve uluslararası tanınırlığa sahip dergilerde makaleleri yayımlanmış, konferanslarda ise sözlü ve yazılı bildiriler sunmuştur. Dr. Sayraç, NSF, Qatar Foundation, Wells Foundation, TÜBİTAK ve YÖK tarafından desteklenen projelerde görev almıştır.

Education Information

Doctorate, Texas A&M University - College Station, United States Of America 2013 - 2017
Postgraduate, Texas A&M University, United States Of America 2011 - 2013
Undergraduate, Turkey 2005 - 2009

Research Areas

Natural Sciences

Academic Titles / Tasks

Associate Professor, Sivas Cumhuriyet University, Mühendislik Fakültesi, Nanoteknoloji Mühendisliği, 2022 - Continues
Assistant Professor, Sivas Cumhuriyet University, Mühendislik Fakültesi, Nanoteknoloji Mühendisliği, 2020 - 2022
Research Assistant, Cankiri Karatekin University, Faculty Of Scıence, Department Of Physıcs, 2017 - 2020

Courses

Nanomalzemelerin Karakterizasyonu Laboratuvarı-II, Undergraduate, 2021 - 2022
Kariyer Planlama, Undergraduate, 2021 - 2022
Mühendisler için Termodinamik - II(İngilizce), Undergraduate, 2021 - 2022

Mühendisler İçin Bilgisayar Uyg. - II, Undergraduate, 2021 - 2022
Modern Fizik (İngilizce), Undergraduate, 2021 - 2022
Mühendisler İçin Bilgisayar Uyg. - I (İngilizce), Undergraduate, 2020 - 2021
Isı Aktarımı, Undergraduate, 2020 - 2021
Mühendisler için Olasılık ve İstatistik(İng), Undergraduate, 2020 - 2021
Mühendisler için Termodinamik - I (İngilizce), Undergraduate, 2020 - 2021

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Optimized synthesis and characterization of La(OH)3 and LaB6 nanostructures for enhanced NIR optical filters**
BÜLBÜL B. Ş., Toprak B., SAYRAÇ M., ÖZEN Y., ÖZÇELİK S.
Physica Scripta, vol.99, no.11, 2024 (SCI-Expanded)

II. **Hydrostatic pressure and temperature effects on nonlinear optical properties in harmonic-Gaussian asymmetric double quantum wells**
SAYRAÇ M., Dakhlaoui H., Mora-Ramos M., UNGAN F.
Physica Scripta, vol.99, no.4, 2024 (SCI-Expanded)

III. **Effect of structural parameters and applied external fields on the third harmonic generation coefficient of AlGaAs/GaAs three-step quantum well**
SAYRAÇ M., Dakhlaoui H., Belhadj W., UNGAN F.
European Physical Journal Plus, vol.139, no.1, 2024 (SCI-Expanded)

IV. **Influence of structural variables and external perturbations on the nonlinear optical rectification, second, and third-harmonic generation in the InP/InGaAs triple quantum well structure**
SAYRAÇ M., Belhadj W., Dakhlaoui H., UNGAN F.
European Physical Journal Plus, vol.138, no.11, 2023 (SCI-Expanded)

V. **The effect of structure parameters and static electric field on the nonlinear optical properties of triple InGaAs/GaAs quantum well**
SAYRAÇ M., Kaynar E., UNGAN F.
Journal of Molecular Structure, vol.1273, 2023 (SCI-Expanded)

VI. **Determination of Optical Properties of MOVPE-Grown InxGa1-xAs/InP Epitaxial Structures by Spectroscopic Ellipsometry**
Kaynar E., Sayrac M., Altuntas I., Demir I.
BRAZILIAN JOURNAL OF PHYSICS, vol.52, no.5, 2022 (SCI-Expanded)

VII. **The nonlinear optical rectification, second and third harmonic generation coefficients of Konwent potential quantum wells**
SAYRAÇ M., Martinez-Orozco J. C., Mora-Ramos M. E., Ungan F.
EUROPEAN PHYSICAL JOURNAL PLUS, vol.137, no.9, 2022 (SCI-Expanded)

VIII. **Interband transitions and exciton binding energy in a Razavy quantum well: effects of external fields and Razavy potential parameters**
SAYRAÇ M., Peter A. J., Ungan F.
EUROPEAN PHYSICAL JOURNAL PLUS, vol.137, no.7, 2022 (SCI-Expanded)

IX. **Nonlinear optical properties in AlxGa1-xAs/GaAs double-graded quantum wells: The effect of the structure parameter, static electric, and magnetic field**
AYDINOĞLU H. S., SAYRAÇ M., Mora-Ramos M., UNGAN F.
Solid State Communications, vol.342, 2022 (SCI-Expanded)

X. **Investigation of optical and structural properties of tin-doped copper oxide thin films prepared by the drop-cast method**
SAYRAÇ M., Sert E.
JOURNAL OF THE AUSTRALIAN CERAMIC SOCIETY, vol.58, no.1, pp.93-100, 2022 (SCI-Expanded)

XI. **Effects of applied external fields on the nonlinear optical rectification, second, and third-harmonic**

generation in an asymmetrical semi exponential quantum well
SAYRAÇ M.
OPTICAL AND QUANTUM ELECTRONICS, vol.54, no.1, 2022 (SCI-Expanded)

XII. **Intensity-dependent nonlinear optical properties in an asymmetric Gaussian potential quantum well-modulated by external fields**
SAYRAÇ M., Turkoglu A., Mora-Ramos M. E., Ungan F.
OPTICAL AND QUANTUM ELECTRONICS, vol.53, no.9, 2021 (SCI-Expanded)

XIII. **Generation of Coherent Extreme Ultraviolet Radiation in an Air Gas Cell with a High Power Femtosecond Laser System**
SAYRAÇ M.
OPTICS AND SPECTROSCOPY, vol.129, pp.825-829, 2021 (SCI-Expanded)

XIV. **Influence of hydrostatic pressure, temperature, and terahertz laser field on the electron-related optical responses in an asymmetric double quantum well**
SAYRAÇ M., Turkoglu A., Ungan F.
EUROPEAN PHYSICAL JOURNAL B, vol.94, no.6, 2021 (SCI-Expanded)

XV. **Generation of even and odd harmonics in the XUV region with controlling the relative delay and polarization of two-color fields**
SAYRAÇ M., Kolomenskii A. A., Dong J., Schuessler H. A.
Optik, vol.226, 2021 (SCI-Expanded)

XVI. **Generation of enhanced even harmonics of fundamental radiation in temporally separated two-color laser fields**
Sayrac M., Kolomenskii A. A., Dong J., Schuessler H. A.
JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA, vol.233, pp.22-27, 2019 (SCI-Expanded)

XVII. **Pressure dependence of high order harmonic generation in nitrogen molecular gas and atmospheric air**
Sayrac M., Kolomenskii A. A., Schuessler H. A.
OPTIK, vol.179, pp.994-1000, 2019 (SCI-Expanded)

XVIII. **Pressure optimization and phase matching of high harmonics generation in CO2 and C2H2 molecular gases**
Sayrac M., Kolomenskii A. A., Schuessler H. A.
JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA, vol.229, pp.1-6, 2018 (SCI-Expanded)

XIX. **Dissociative ionization of acetonitrile in intense femtosecond laser fields**
Boran Y., Kolomenskii A. A., Sayrac M., KAYA N., Schuessler H. A., Strohaber J.
JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS, vol.50, no.13, 2017 (SCI-Expanded)

XX. **Nonlinear mixing of optical vortices with fractional topological charge in Raman sideband generation**
Strohaber J., Boran Y., Sayrac M., Johnson L., Zhu F., Kolomenskii A. A., Schuessler H. A.
JOURNAL OF OPTICS, vol.19, no.1, 2017 (SCI-Expanded)

XXI. **Extension of filament propagation in water with Bessel-Gaussian beams**
Kaya G., KAYA N., Sayrac M., Boran Y., Strohaber J., Kolomenskii A. A., Amani M., Schuessler H. A.
AIP ADVANCES, vol.6, no.3, 2016 (SCI-Expanded)

XXII. **Probing nonadiabatic molecular alignment by spectral modulation**
KAYA N., Kaya G., Sayrac M., Horan Y., Anumula S., Strohaber J., Kolomenskii A. A., Schuessler H. A.
OPTICS EXPRESS, vol.24, no.3, pp.2562-2576, 2016 (SCI-Expanded)

XXIII. **High harmonic generation in Ne and H-2 gas mixtures**
Sayrac M., Kolomenskii A. A., Strohaber J., Schuessler H. A.
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS, vol.32, no.12, pp.2400-2405, 2015 (SCI-Expanded)

XXIV. **Pressure optimization of high harmonic generation in a differentially pumped Ar or H-2 gas jet**
Sayrac M., Kolomenskii A. A., Anumula S., Boran Y., Hart N. A., KAYA N., Strohaber J., Schuessler H. A.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.86, no.4, 2015 (SCI-Expanded)

Articles Published in Other Journals

I. **Numerical Investigation of Diffraction Patterns of Small Size Apertures Using Light Sources From Xuv to The Visible Region: Simulation for The Small Size Structures**
SAYRAÇ M., KAYNAR E., UNGAN F.
Cumhuriyet Science Journal, vol.44, no.2, pp.377-383, 2023 (Peer-Reviewed Journal)

II. **Numerical Simulation of Coherent Extreme Ultraviolet Radiation by Considering Simple Hydrogen Atomic Potential**
SAYRAÇ M.
Iğdır Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.13, no.1, pp.259-267, 2023 (Peer-Reviewed Journal)

III. **Exploring the Nonlinear Optical Behaviour of InGaAs/GaAs Triple Quantum Wells via Structural Modulations and External Electric Fields**
SAYRAÇ M., Dakhlaoui H., Mora-Ramos M., UNGAN F.
International Journal of Nanoscience and Nanotechnology, vol.19, pp.249-262, 2023 (Scopus)

IV. **Investigation of the Structural and Thermodynamic Parameters on the Nonlinear Optical Properties of InGaAs/InP Triple Quantum Well Exposed to an External Electric Field**
SAYRAÇ M., Dakhlaoui H., Mora-Ramos M. E., UNGAN F.
International Journal of Nanoscience and Nanotechnology, vol.19, pp.277-293, 2023 (Scopus)

V. **High Harmonic Generation Produced in Molecular Nitrogen using Ultrashort Optical Pulses**
SAYRAÇ M.
SÜLEYMAN DEMIREL ÜNIVERSITESI FEN EDEBIYAT FAKÜLTESI FEN DERGISI = SÜLEYMAN DEMIREL UNIVERSITY FACULTY OF ARTS AND SCIENCE JOURNAL OF SCIENCE, vol.17, 2022 (Peer-Reviewed Journal)

VI. **High Harmonic Generation in Ar and N2 Gas Mixture Using Ultrashort High Power Laser System**
SAYRAÇ M.
Journal of the Institute of Science and Technology, pp.1659-1665, 2020 (Peer-Reviewed Journal)

VII. **Characterization of GaAs/GaAlAs Heterostructures Grown on GaAsSubstrate using High Resolution X-ray Diffraction Method**
Sayrac H., SAYRAÇ M., Elagöz S.
Afyon Kocatepe Üniversitesi Fen ve Mühendislik Bilimleri Dergisi, 2020 (Peer-Reviewed Journal)

VIII. **BEHAVIOUR OF LASER BEAM IN NONLINEAR MEDIA**
SAYRAÇ M., SAYRAÇ H., ARI M., TAPLAMACIOĞLU M. C.
International Journal on"Technical and Physical Problems of Engineering" (IJTPE), vol.11, pp.77-80, 2019 (Scopus)

IX. **GENERAL OVERVIEW OF WIRELESS COMMUNICATION TECHNOLOGY**
SAYRAÇ M., ARI M., TAPLAMACIOĞLU M. C.
International Journal on"Technical and Physical Problems of Engineering" (IJTPE), vol.11, pp.25-30, 2019 (Scopus)

Refereed Congress / Symposium Publications in Proceedings

I. **YAPAY ZEKA İLE TERMAL ETKİLERİN KUANTUM KUYULARINDAKİ LİNEER OLMAYAN ÖZELLİKLER ÜZERİNDEKİ ETKİSİNİN İNCELENMESİ**
Sayraç M., Yalçın E.
INTERNATIONAL SCIENTIFIC RESEARCH AND INNOVATION CONGRESS, Ankara, Turkey, 5 - 06 June 2024

II. **Sputtered AlN for Distributed Bragg Reflectors Operating in the SWIR Wavelengths**
Kaynar E., Hopoglu H., ALTUNTAŞ İ., DEMİR İ., SAYRAÇ M., Tüzemen E., ALAYDİN B. Ö.
Novel Optical Materials and Applications, NOMA 2022, Maastricht, Netherlands, 24 - 28 July 2022

III. **Numerical Simulation of Diffraction Patterns with Different Illumination Laser Wavelength**
SAYRAÇ M.
International Conference on Engineering Technologies (ICENTE'21), Konya, Turkey, 18 - 20 November 2021

IV. **Computation of Atomic Dipole Spectra for Different Atoms by Considering Short and Long Electron Trajectories under the Intense Laser Pulse**

SAYRAÇ M.
9TH INTERNATIONAL ADVANCED TECHNOLOGIES SYMPOSIUM (IATS'21), Turkey, 27 November 2021

Supported Projects

Özçelik S., Sayraç M., Özen Y., TUBITAK Project, Yakın Kızıl Ötesi Spektrumu Soğurucu Optik Filtre Geliştirilmesi, 2021 - 2023

Metrics

Publication: 67
Citation (WoS): 48
Citation (Scopus): 215
H-Index (WoS): 5
H-Index (Scopus): 10

Congress and Symposium Activities

Yoğun Madde Fiziği , Invited Speaker, Ankara, Turkey, 2020

Scholarships

Turkish Higher Education, Ministry of Education, 2011 - 2017

Non Academic Experience

MİLLİ EĞİTİM BAKANLIĞI