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EDUCATION

Ph.D. in Plasma Physics , *Title of thesis : Investigation of field equations and their coupling for propagation of the waves in multilayer elliptical long plasma wave guides in general case*, University of Kashan, Kashan, Iran, 2012.

M.Sc. in Theoretical Physics , *Title of thesis : Neutrino oscillation in space time with torsion* , University of Tehran, Tehran, Iran ,2000.

B.Sc. Educational Physics ,University of Kashan, Kashan, Iran, 1995.

RESEARCH INTERESTS

Electromagnetic properties of elliptical plasma waveguides , Acceleration of charged particles(electron) , Electromagnetic wave scattering from the plasmas , Excitation of electromagnetic waves by relativistic electron beams , Free electron laser.

PUBLICATIONS IN JOURNALS

- 1- Propagation of electromagnetic waves in the elliptical waveguides made of the materials with anisotropic Hermitian dielectric tensors(B. Jazi, **A. Abdoli-Arani**, Z. Rahmani, M. Monemzadeh, R. Ramezani-Arani, Taylor & Francis , Waves in Random and Complex Media,2010)
- 2- The dielectric tensor and field equations in the inhomogeneous cold collisionless magnetized drift plasmas with elliptical cross sections (B. Jazi, **A. Abdoli-Arani**, Z. Rahmani, R. Ramezani-Arani, M. Monemzadeh, Elsevier, Physics letters A, 2010)
- 3-Theoretical calculation of the dielectric tensor and field equations in columns with elliptical cross-sections including inhomogeneous magnetized cold collisionless drift and rotating plasmas(**A. Abdoli-Arani**, Taylor & Francis , Waves in Random and Complex Media,2011)
- 4-Influence of thermal and collisional effects on the dielectric permittivity tensor in a multi layer plasma waveguide with elliptical cross section. (B. Jazi , A. R. Niknam , **A. Abdoli-Arani**, IEEE: Transaction on Plasma Science 2011)
- 5- A new description based on modified Airy function for interference in moving magnetized plasma slabs (B. Jazi, Z. Rahmani, **A. Abdoli-Arani**, S. Tahani-Ravandi Talor & Francis , Waves in Random and Complex Media,2011)
- 6- About Cherenkov and Cyclotron Wave Excitations by Elliptical Relativistic Modulated Electron Beam in a Cylindrical Plasma Column With Elliptical Cross Section(B. Jazi & **A. Abdoli-Arani**, IEEE: Transaction on Plasma Science,2012)
- 7-About excitation of surface plasma waves by elliptical relativistic electron beam in a magnetized dusty plasma column with elliptical cross section(**A. Abdoli-Arani** & B. Jazi, : AIP, Physics of plasmas , 2012)
- 8-Scattering from an elliptical cylinder plasma for the electromagnetic waves with the wavelength of much greater than the dimensions of the plasma cross section (**A. Abdoli-Arani**, R.Ramezani-Arani, B.Jazi , S.Golharani, Taylor & Francis , Waves in Random and Complex Media,2012)
- 9-Dielectric tensor elements for description of the waves in the inhomogeneous warm collisional rotating plasma spheroids (**A. Abdoli-Arani**, R.Ramezani-Arani, Taylor & Francis , Waves in Random and Complex Media,2012)

- 10- Acceleration of an electron inside the circular and elliptical waveguides by microwave radiation(**A. Abdoli-Arani**, B. Jazi & B. Shokri, IEEE: Transaction on Plasma Science,2012)
- 11-Time growth rate and field profiles of hybrid modes excited by a relativistic elliptical electron beam in an elliptical metallic waveguide with dielectric rod (B. Jazi , Z. Rahmani, E. Heidari-Semiromi & **A. Abdoli-Arani**, AIP, Physics of plasmas , 2012)
- 12-Acceleration and dynamics of an electron in the degenerate and magnetized plasma elliptical waveguide (**A. Abdoli-Arani**, B. Jazi, ,B. Shokri AIP, Physics of plasmas , 2013)
- 13-Effect of relativistic elliptical beam modulation on excitation of surface plasma waves in a magnetized dusty plasma column with elliptical cross section(**A. Abdoli-Arani** ,B. Jazi, yTator & Francis , Waves in Random and Complex Media,2013)
- 14-Interference simulation in a cold collisionless moving magnetized plasma slab (Z. Rahmani, B. Jazi **A. Abdoli-Arani**, Taylor & Francis , Waves in Random and Complex Media,2013)
- 15- Analysis of long wavelength electromagnetic scattering by a magnetized cold plasma prolate spheroid (Y. Ahmadizadeh , B. Jazi & **A. Abdoli-Arani**, Taylor & Francis , Waves in Random and Complex Media,2013)
- 16-Dispersion relation of TM mode electromagnetic waves in the rippled-wall elliptical plasma and dielectric waveguide in presence of elliptical annular electron beam(**A. Abdoli-Arani**, IEEE: Transaction on Plasma Science,2013)
- 17-Acceleration and Deflection of an Electron Inside the Circular Sectoral Plasma Waveguides(**A. Abdoli-Arani**, IEEE: Transaction on Plasma Science,2013)
- 18-Optical properties of the electromagnetic waves propagating in an elliptical cylinder multilayer structure (**A. Abdoli-Arani**, Chinese Physics B,2014)
- 19-Generalized permittivity tensor for the description of waves in general relativistic plasma around a Schwarzschild black hole (R.Ramezani-Arani ,**A. Abdoli-Arani**, H.Shokrgozar-Arani,Journal of Plasma Physics, Cambridge university Journal,2014)
- 20-Theoretical investigation of resonance frequencies in long wavelength electromagnetic wave scattering process from plasma prolate and oblate spheroids placed in a dielectric layer(Y. Ahmadizadeh, B. Jazi and **A. Abdoli-Arani**,Taylor & Francis , Waves in Random and Complex Media, 2014)
- 21-Influence of pondermotive force on the microwave and plasma interaction in an elliptical waveguide, (**A. Abdoli-Arani**, AIP, Physics of plasmas , 2014)

- 22-Modification of density profile a interaction of three superposing fundamental modes with plasma in a cylindrical waveguide(**A. Abdoli-Arani**, Taylor & Francis , Waves in Random and Complex Media, 2014)
- 23- The response of a rotating magnetized cold plasma prolate spheroid in presence of a long wavelength electromagnetic wave(Y. Ahmadizadeh, B. Jazi, and **A. Abdoli-Arani**, IEEE: Transaction on Plasma Science, 2014)
- 24-Investigation of Plasma Waves Propagation around Traversable Wormhole's Throat(R.Ramezani-Arani,A.R.Mirzaee and **A. Abdoli-Arani**, Taylor & Francis , Waves in Random and Complex Media, 2014)
- 25-Electromagnetic modeling of the energy distribution of a metallic cylindrical parabolic reflector covered with a magnetized plasma layer, cylindrical parabolic reflector covered with a magnetized plasma layer ,(B.Jazi,,M.R.KhajehemiA. R. Niknamzaei,B.D.avoodi-Rahaghi,Z.Rahmani,**A. Abdoli-Arani**, AIP, Physics of plasmas , 2014)
- 26-The effect of ponderomotive force on the density in the interaction of two superposing fundamental modes with plasma in an elliptical waveguide,(**A. Abdoli-Arani**, IOP, Plasma Sources Science and Technology,2014)
- 27-Dispersion relation for space-charge waves in a warm plasma-filled elliptical waveguide in an Infinite axial magnetic field, (**A. Abdoli-Arani** ,S.Safari,Taylor & Francis , Waves in Random and Complex Media, 2015)
- 28-Resonance of warm plasma column with elliptical cross section at scattering of long wavelength electromagnetic waves, (**A. Abdoli-Arani**,S.Safari,Taylor & Francis , Waves in Random and Complex Media, 2015)
- 29-Plasma Waves Dispersion Relation at Near of the Cosmological Black Holes in an Expanding Universe Dominated by Dark Energy,(R.Ramezani-Arani,A.R.Mirzaee and **A. Abdoli-Arani**,Springer, International Journal of Theoretical Physics,2015)
- 30-Electron energy gain in the transverse electric mode of a coaxial waveguide filled with plasma by microwave radiation, (**A. Abdoli-Arani** ,Taylor & Francis , Waves in Random and Complex Media, 2015)
- 31) Electron energy gain in the fundamental mode of an elliptical waveguide in the presence of static helical magnet by microwave radiation, (**A. Abdoli-Arani** ,Taylor & Francis , Waves in Random and Complex Media, 2015)
- 32) Study of electron acceleration through the TE_{11} mode in a collisional plasma-filled cylindrical waveguide, (**A. Abdoli-Arani**, M.Moghaddasi ,Taylor & Francis , Waves in Random and Complex Media, 2016)

- 33) Electron acceleration considering ponderomotive force effect in a plasma filled rectangular waveguide by microwave radiation, (**A. Abdoli-Arani**, Taylor & Francis , Waves in Random and Complex Media, 2016)
- 34) Influence of electron-ion collisions in plasma on the electron energy gain using the TE₁₁ mode inside an elliptical waveguide,(**A. Abdoli-Arani**,M.J.Basiri, IOP , Physica Scripta, 2016)
- 35) Field analysis for a configuration of sheath helix in the presence of a metallic rod, (**A. Abdoli-Arani**, Taylor & Francis , Waves in Random and Complex Media, 2017)
- 36) Dispersion relation and electron acceleration in the combined circular and elliptical metallic-dielectric waveguide filled by plasma,(**A. Abdoli-Arani**, and M. M. Montazeri, AIP, Physics of plasmas , 2018)
- 37) Study on the Influence of Two Relativistic Circular Electron Beam Columns Placed in an Elliptical Dielectric Waveguide on Excitation and Amplification of Electromagnetic Waves Using Finite-Element Method(Z.Rahmani , E. Heidari-Semiromi and **A. Abdoli-Arani**,IEEE Transactions on Plasma Science,2019)
- 38) Nonlinear effect of microwave longitudinal ponderomotive force on the dynamics and energy of an externally injected electron in an inhomogeneous plasma filled circular and elliptical cylinder waveguides(**A. Abdoli-Arani** and N.Ghanbari, Taylor & Francis , Waves in Random and Complex Media, 2019)
- 39) Single electron acceleration in an isosceles right triangular waveguide(**A. Abdoli-Arani** ,M.Kadkhodaei-AraniZ.Rahmani,Indian Journal of Physics,Springer,2019)
- 40) Bound state energy and wave function of tetraquark $bbud$ from lattice QCD potential(F. Chezani Sharahi, M. Monemzadeh, and **A. Abdoli Arani** , Modern Physics Letters A,2019)
- 41) Electron density profile inside a cylindrical plasma with elliptical cross section in a microwave discharge,(Z Eghbali and **A Abdoli Arani** , Indian Journal of Physics,Springer,2020)
- 42) Enhancement of Gain and Modified Electron Beam Trajectories Using a Relativistic Electron Beam With an Elliptical Cross Section in Free-Electron Laser With a Helical Wiggler and Ion-Channel Guiding(F. S. Abdollahi,**A. Abdoli-Arani** and T.Mohsenpour,IEEE Transactions on Plasma Science,2020)

- 43) Energy and trajectory of injected electron in the mixed circular and elliptical waveguide filled magnetized plasma , (M. M. Montazeri and **A. Abdoli-Arani**, Optik , Elsevier, 2020)
- 44) Trajectories in relativistic electron beam with elliptical cross section under effects of self-fields,axial,planar and helical wiggler magnetic fields (F. S. Abdollahi,**A. Abdoli-Arani** and T.Mohsenpour, Waves in Random and Complex Media, Taylor & Francis, 2020)
- 45) The Calculation of binding energy and wave function of *bbss* tetraquark from lattice QCD potential with analytical approach(Fereshteh Chezani Sharahi, Majid Monemzadeh, **Abbas Abdoli Arani** ,Journal of Research on Many-body Systems,2020)
- 46) Electromagnetic fields and trajectory of injected electron inside an elliptical coaxial magnetized plasma waveguide (B.Abrahimi , **A. Abdoli-Arani** and Z.Rahmani, IEEE Transactions on Plasma Science,2020)
- 47) Calculation of the resonance frequency of a toroidal plasma (G. Khojeh and **A.Abdoli Arani** , Scientific Journal of Applied Electromagnetics,2021)
- 48) Investigation of fields and electron acceleration through an coaxial magnetized plasma waveguide (M. M. Montazeri and **A. Abdoli-Arani**, Journal of Modern Research Physics, 2021)
- 49) Dispersion properties and beam excitation of symmetric slow waves in helix traveling wavetubes in the presence of plasma (M. Vafaei, M. Nejati, **A. Abdoli-Arani** and A. R. Niknam, Journal of Electromagnetic Waves and Applications, Taylor & Francis, 2021)
- 50) Scattering of electromagnetic waves by a warm plasma antenna with an elliptical cross section, (S.Pirizad , **A. Abdoli-Arani** and Z.Rahmani, RADAR,2022)
- 51) Study of gain and trajectories in elliptical electron beam considering a planar wiggler and self fields and ion-channel in free electron laser (F. S. Abdollahi,**A. Abdoli-Arani** and T.Mohsenpour, Chinese Journal of Physics, Elsevier, 2022)
- 52) Fields and injected electron dynamic in the coaxial waveguide with Piet Hein cross section filled plasma considering TE and TM modes (M.B.Abrahimi and **A. Abdoli-Arani**, The European Physical Journal Plus,Springer, 2022)
- 53) Simulation of Gaussian electromagnetic wave interaction and its effect on the dynamics of metallic nanosphere (repulsion or even elasticity (F. Khosravi, B. Jazi and **A. Abdoli-Arani**, The European Physical Journal Plus,Springer, 2022)

- 54) Investigation of TE and TM modes fields and injected electron dynamic in the plasma waveguide with Piet Hein cross section (M.B.Abrahimi and **A. Abdoli-Arani**, IOP , Physica Scripta, 2022)
- 55) Scattering and resonant frequency of a toroidal plasma covered by a dielectric layer (G. Khojeh and **A.Abdoli Arani**, Chinese Journal of Physics, Elsevier, 2022)
- 56) Elliptical and circular annular solid electron beam for excitation of hybrid modes in the plasma combined circular and elliptical waveguides (**A. Abdoli-Arani**, Optik , Elsevier, 2022)
- 57) Efficacy of ozonized water spray for the sanitization of food contact surfaces contaminated with E. coli and S. aureus as an eco-friendly asepsis approach(Z. Rahmani, R.Sharafati Chaleshtori , **A. Abdoli Arani**, Mohsen Taghizadeh,Journal of Nutrition and Food Security,2022)
- 58) The plasma nanosphere cooling rate simulation in the presence of the coherent electromagnetic waves with Gaussian profile (F. Khosravi, B. Jazi and **A. Abdoli-Arani**, The European Physical Journal D, Springer, 2022)
- 59) Effect of strong uniform axial magnetic field on the TE and TM modes fields and injected electron dynamic in the plasma waveguide with Piet Hein cross section (M. B.Abrahimi and **A.Abdoli Arani** , Scientific Journal of Applied Electromagnetics,2022)
- 60) Excitation and amplification of hybrid modes in circular-elliptic combined plasma waveguides including relativistic electron beam (M. Alizadehfaz,Z.Rahmani, **A.Abdoli Arani** , Scientific Journal of Applied Electromagnetics ,2022)
- 61) Potentials and fields of space-charge waves in the coaxial elliptical waveguide consisting of an annular plasma in the presence of an axial magnetic field (**A.Abdoli Arani** and F.Bahreman , Proceedings of the National Academy of Sciences, India Section A: Physical Sciences,2022)
- 62) Investigating the resonance of an elliptical solid and annular plasma column with the dielectric layer and the core (S.Pirizad Hejrandoost , **A. Abdoli-Arani** and Z.Rahmani, Pramana,2023)
- 63) Effect of perfect electromagnetic conductor wall on the injected electron dynamic in the magnetized plasma filled circular and elliptical waveguides(**A. Abdoli Arani** , Brazilian Journal of Physics, Springer,2023)
- 64) Electromagnetic wave propagation in a chiropasma filled elliptical waveguide bounded by perfect electromagnetic conductor (**A. Abdoli Arani** , Journal of the Optical Society of America A,2023)

- 65) Calculation of radar cross section of the magnetized plasma antenna with elliptical cross-section, (S.Pirizad Hejrandoost, **A. Abdoli-Arani** and Z.Rahmani, RADAR,2023)
- 66) Electromagnetic wave propagation in an elliptical chiropasma waveguide with elliptical annular dielectric layer (N.Ggolamshahi and **A. Abdoli-Arani**, Indian Journal of Physics,2023)
- 67) Analysis and application of the electromagnetic wave propagation,fields and dispersion relation in an elliptical chiro plasma waveguide immersed in magnetized plasma (N.Ggolamshahi and **A. Abdoli-Arani**, Radio Science,2023)
- 68) Simulation of the electron acceleration in the waveguide with Piet-Hein cross-section (M.B.Abrahimi and **A. Abdoli-Arani**, The European Physical Journal Plus,Springer, 2022)
- 69) Electromagnetic waves propagation in a perfect electromagnetic conductor coaxial waveguide containing chiro plasma (M. Aghajani Baragoori, **A.Abdoli Arani** , Scientific Journal of Applied Electromagnetics ,2025)
- 70) About amplification of slow waves within a novel combinatorial plasma waveguide, by injecting circular and elliptical pencil electron beam inside strongly magnetized plasma column (M. Alizadehfar,Z.Rahmani, **A.Abdoli Arani** , Journal of Theoretical and Applied Physics,2025)

INVITED REVIEWER FOR JOURNALS

- ***IEEE Transaction on plasma Science***
- ***Physics of Plasmas(AIP)***
- ***IEEE Transactions on Microwave Theory and Techniques***
- ***Plasma Science and Technology(IOP)***
- ***Waves in Random and Complex media (Taylor & Francis)***
- ***International Journal of Theoretical Physics***
- ***Advances in Physics: X***
- ***IET Microwaves, Antennas & Propagation***
- ***Microwave and Optical Technology Letters***
- ***European Physical Journal - Applied Physics***
- ***IEEE Access***
- ***Journal of Microwave Power and Electromagnetic Energy***
- ***Journal of Optical Communications***
- ***Scientific Journal of Radar***
- ***Chinese Journal of Physics(Elsevier)***
- ***Optical and Quantum Electronics***

- *Indian Journal of Physics(Springer)*
- *Mathematics Interdisciplinary Research*
- *Scientific Journal of Advanced Defense Science and Technology*
- *Journal of Physical Science*
- *Scientific Journal of Applied Electromagnetics*
- *Al-Bahir Journal for Engineering and Pure Sciences*
- *Physica Scripta(IOP)*
- *Optics Express*
- *Journal of the Optical Society of America A*
- *Advanced Defense Science and Technology*
- *Radio Science*