



Faculty of Physics Kharazmi University

Ali Hasanbeigi

Scientific Position: Associate Professor

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Education

Ph.D.: Physics, Department of Physics, Kharazmi University, Tehran, Iran

M.Sc.: Physics, Department of Physics, Institute for Advanced studies in Basic sciences (IASBS), Zanjan, Iran

B.Sc.: Physics, Department of Physics, Kharazmi University, Tehran, Iran

Honors

- Distinguished Researcher 2015.
 - Distinguished Researcher 2011
 - Distinguished student in Kharazmi University 2010.
 - Ranked first in the Phd exam
 - Ranked 1 among graduate students of the department, Institute for Advanced Studies in Basic Sciences, between years of 1998 and 2000 in M.Sc.
 - Top student in BSc program.
 - Introduced as a scientific elite by the National Elite Institute
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Responsibilities

- Head of Physics Department
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Research Interests

Theoretical investigation and numerical simulation of plasma, Free Electron Laser, Stability of Charged particle Beams.

Courses

Bs.c courses

- General Physics I,II & III.
- Quantum Mechanics I & II.
- Mathematical Physics I & II.
- Classical Mechanics I & II
- Electromagnetism I & II.
- Plasma Physics.
- Modern Physics.

Ms.c courses

- Computational Physics.
- Advanced Quantum Mechanics I & II
- Quantum Methods in Atomic and Molecular physics.
- plasma physics
- Electrodynamics

Special topics **Ph.D courses**

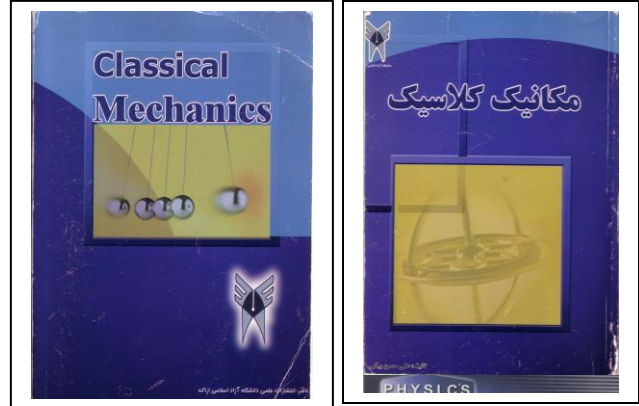
- Advanced plasma physics I.
 - Advanced plasma physics II.
 - Special topics.
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References

- Prof. Hassan Mehdian (PhD Supervisor) Email: mehdian@khu.ac.ir
-

Books written in Persian:

1. Classical Mechanics
2. Physics



Selected Journal Articles

2016

[41] Kinetic description of free electron laser with electromagnetic-wave wiggler and ion-channel guiding by using Einstein coefficient technique

Laser Physics **26** (4), 045003 (2016)

[40] Tunable Faraday effect in one-dimensional photonic crystals doped by plasma

Optik - International Journal for Light and Electron Optics, **127**, 3895 (2016)

2015

- [39] Enhancement of Terahertz radiation power from a prebunched electron beam using helical wiggler and ion-channel guiding
Phys. Plasmas **22**, 123116 (2015).
- [38] Induced Maximum Magnetic Field in a Cosmic Outflow System by Relativistic Current Filamentation Instability: Exact Analytical Model
The Astrophysical Journal **801** (2), 89 (2015).
- [37] Numerical study of electron acceleration by plasma wave in an ion channel under obliquely applied magnetic field
Optik-International Journal for Light and Electron Optics **126** (21), 3299 (2015).
- [36] Magneto-optical properties of one-dimensional conjugated photonic crystal heterojunctions containing plasma layers
Appl. Opt **54** (26), 7949 (2015).
- [35] A relativistic PIC model of nonlinear laser absorption in a finite-size plasma with arbitrary mass and density ratios Laser and Particle Beams, **33**, 4 (2015).
- [34] Optical and magneto-optical properties of plasma-magnetic metamaterials
Journal of Physics D: Applied Physics , **48** (30), 305101 (2015).
- [33] The general dispersion relation of induced streaming instabilities in quantum outflow systems AIP Advances **5**, 117236 (2015).

2014

[32] Linear theory of quantum two-stream instability in a magnetized plasma with a transverse wiggler magnetic field

Laser and Particle Beams, **32** (3), 353 (2014).

[31] The effect of plasma background on the instability of two non-parallel quantum plasma shells in whole K space

Physics of Plasmas, **21**, 08, (2014)

[30] A spatiotemporal study of the relativistic nonlinear effects on laser absorption by finite-size magnetoplasma

The European Physical Journal D, **68**, 358 (2014).

[29] The Effect of Magnetic Field on Bistability in 1D Photonic Crystal Doped by Magnetized Plasma and Coupled Nonlinear Defects

Physics of Plasmas, **21**, 012101 (2014).

[28] Filamentation instability of electron/ion beams in magnetized plasma waveguide

Journal of Plasma Physics, **80**, 81-87 (2014).

[27] Growth rate enhancement of free-electron laser by two consecutive wigglers with axial magnetic field

Pramana - journal of physics, **82** (6), 1049-1060 (2014).

[26] *Electron acceleration in an ion channel by a magnetized plasma wave* Iranian Journal of Physics Research **14** (1), 83- 87 (2014)

2013

[25] Influence of finite radial geometry on the growth rate of ion-channel free electron laser

Phys. Plasmas, **20**, 113114 (2013)

[24] Quantum instability of two non-parallel flows: Parallel wave propagation
Physics Letter A, **377**, 2083 (2013)

[23] Filamentation instability of laser beam in an inhomogeneous plasma in arbitrary oriented external magnetic field

Journal of Plasma Physics **79** (05), 921 (2013)

[22] The instability of two non-parallel plasma shells in quantum plasma

Astrophys Space Sci **346** (2), 421-430 (2013)

[21] Kinetic description of a wiggler pumped ion-channel free electron laser by applying the Einstein coefficient technique

Journal of Plasma Physics, **79** (05), 853-857 (2013)

[20] Analysis of plasma-magnetic photonic crystal with a tunable band gap

Phys. Plasmas, **20**, 043505 (2013)

[19] Dispersion relation and growth rate for corrugated channel FEL with a helical wiggler pump

Chinese Physics B, **22**, 075205 (2013)

2012

[18] Filamentation instability of quantum magnetized plasma in the presence of an external periodic magnetic field

Phys. Plasmas, **19**, 042112 (2012)

[17] Quantum statistical properties of free-electron laser with ion-channel guiding

Journal of Plasma Physics, **78**, 537 (2012)

[16] Linear theory of magnetized ion-channel free-electron laser

Phys. Plasmas, **19**, 023108 (2012)

[15] The Solution of the Spherical Raman–Nath Equation for Free-Electron Laser in the Presence of Ion-Channel Guiding

2011

[14] Gain calculation of a free-electron laser(FEL)operating with a non-uniform ion-channelb guiding

Chinese Physics B, **20**,094103 (2011)

[13] Controlling chaotic behavior of the equilibrium electrons by simultaneous using of two guiding fields in a FEL with an electromagnetic-wave wiggler

Phys. Plasmas **18**, 043104 (2011)

[12] Comment on 'Chaotic electron trajectories in an electromagnetic wiggler free-electron laser with ion-channel guiding'

Phys. Plasmas **18**, 054703 (2011)

[11] Kinetic description of self-fields effects on laser and betatron emission in wiggler-pumped ion-channel free electron laser

Phys. Scr. **83**, 035401 (2011)

[10] High-power microwave generation by a periodic focusing quadrupole transport ,

IEEE Transactions on Plasma Science, **39**, 761 (2011)

[09] Self-fields effects on small-signal gain in two-stage free-electron lasers

Pramana J. Phys., **76**, 489 (2011)

2010

- [08] Effect of the electron-beam self-fields on gain in an optical wiggler pumped free-electron laser
Contrib. Plasma Phys. **50**, 133 (2010).
- [07] Free-electron laser harmonic generation in an electromagnetic-wave wiggler and ion channel guiding
Phys. Plasmas, **17**, 023112 (2010).
- [06] Generation of stimulated emission from a relativistic beam by magnetized Dusty Plasma Crystals(DPCs),
Plasma Phys. Control. Fusion **52** ,055005, (2010).

2009 and before

- [05] Free-electron lasers with magnetized ion-wiggler,
Nuclear Inst. and Methods in Physics Research, A, **604**, 471 (2009)
- [04] Self-fields in a Free-electron Laser with electromagnetic-wave wiggler and ion-channel guiding,
Phys. Plasmas, **15** ,123101(2008).
- [03] Dispersion relation and growth rate in electromagnetically pumped free-electron lasers with ion channel guiding,
Phys. Plasmas, **15**, 073103 (2008).

[02] Steady-state electron trajectories and growth rate in electromagnetically pumped free-electron lasers with specific non-uniform magnetic field,

Phys. Plasmas, **15**, 73102(2008).

[01] Two-Stream Instability in Free Electron Laser with a Planar Wiggler and an axial guide magnetic field,

Phys. Plasmas,**15**, 043103(2008).

List of papers presented in conferences

19. Maximum magnetic field in cosmic outflows systems

Plasma Sciences (ICOPS), IEEE International Conference on, 1-1 (2015)

18. The effect of drift space length on the Terahertz radiation in a helical wiggler

The 3th confence of engenearing and physics of plasmas, Iran, Tabriz, 461 (2015)

17. Numerical study of electron acceleration by a magnetized Plasma wave

Conference on Computational Physics (CCP2012) 454, 011001 (2012)

16. Dispersion relation of Raman FEL with helical Wiggler and ion channel

Proceedings of Annual Physics Conference of Iran, yazd, 440-444,(2012)

15.The Influence of Electron Beam Radius on Free Electron Laser instability with Longitudinal Magnetic Wiggler

Proceedings of Annual Physics Conference of Iran, yazd, 2447-2450,(2012)

14.The effect of various parameters on the filamentation instability in a relativistic magnetized plasma

Proceedings of Annual Physics Conference of Iran, yazd, 2527-2730,(2012)

13. Growth rate of Farley-Buneman instability in dusty plasmas

Proceedings of Annual Physics Conference of Iran, yazd, 2474-2477,(2012)

12. Dispersion relation of low frequency Alfvén waves in cold quantum magnetoplasma

Proceedings of Annual Physics Conference of Iran, yazd, 2519-2522,(2012)

11. Effects of density of particles on longitudinal two stream instabilities

Proceedings of Annual Physics Conference of Iran, yazd, 2519-2522,(2012)

10. Comparison of the Orbit Groups for both Dusty Plasma Crystal (DPCs) and wiggler Pumped, Free Electron Laser (FEL)

33rd International FEL Conference, SHANGHI, CHINA (2011)

09. Gain of quantum free electron laser with axial magnetic field

The 4th International Workshop on Plasma Science and Applications, Tehran, Iran (2011)

08. Two stream filamentation instability in a quantum magnetized plasma

The 4th International Workshop on Plasma Science and Applications, Tehran, Iran (2011)

07. Influence of free-electron laser parameters and axial magnetic field on the growth rate

The 4th International Workshop on Plasma Science and Applications, Tehran, Iran (2011)

06. Numerical investigation of electron acceleration by plasma wave in the presence of non-uniform magnetic field

The 4th International Workshop on Plasma Science and Applications, Tehran, Iran (2011)

05. Electron trajectories of a wiggler pumped free-electron laser with axial magnetic field and ion-channel guiding

The 4th International Workshop on Plasma Science and Applications, Tehran, Iran (2011)

04. Growth rate of jeans instability in quantum dusty plasma

Proceedings of annual physics conference of Iran, Urmia University, 1634-1636, September 2011

03. Investigation of the electron orbits in a dusty plasma free electron laser

Proceedings of annual physics conference of Iran, Urmia University, 1272-1275, September 2011

02. Electron trajectories in Free electron laser with an elliptically polarized static wiggler field

Proceedings of annual physics conference of Iran, Urmia University, 1285-1288, September 2011

01. Guiding Effects on Electron Trajectories in an Electromagnetically Pumped Free Electron Laser

31st International Free Electron Laser Conference, BT Convention Centre, Liverpool, UK (2009)

Thesis and Dissertations

Title	Advisor of Phd Student	Graduated
Investigation of instability for non-parallel plasma flows	Kamal Hajisharifi	2015
The effect of the plasma on the wave propagation in the magneto-photonics crystals	Zahra MohamadZahery	2015
An Investigation on Plasma Characteristics Effects on the Plasma Antenna Radiation Patterns	N. Nasr	-
Title	Msc Student	Graduated
Kinetic Description of Free-Electron Laser Gain using the Einstein Coefficient Method	S. ABASI ROSTAMI	January 27, 2013
Free electron laser with circular waveguide	E. TAGHIPOUR	January 27, 2013
Filamentation Instability of Electromagnetic wave in magnetized plasma	M. RAHPEIMA	March 10, 2013
Particle Simulation of Free-Electron Laser via FDTD	R. FARAJI	March 13, 2013.

Vlasov description of free electron laser with helical wiggler	Mohammad Bahmani	February 2013.
The effect of wiggler harmonics on the growth rate of free electron laser	AmirHosein. KIYAN	March 11, 2014
Relativistic electron beam interaction in quantum plasma"	Esmat NOORI	March 9, 2014 .
The effect of ion-beam on the excitation of waves in plasma waveguide	Keyvan Feyzi	Sep 20, 2014.
Streaming instability in a bounded dusty plasma	Noushin Ghaem	Sep 21, 2014.
Wave amplifying by relativistic electron beam in an electrostatic system with sinusoidal-ripple bounday	Maryam Salehi	Sep 8, 2014.
The effect of a laser bunched relativistic electron beam in radiation of wave in FEL	Peyman Gomar	Sep 21, 2014
, "Decreasing Energy loss in a plasma filled waveguide"	Zahra Golabgir	Sep 21, 2014.
"Surface waves in magnetized quantum electron-positron plasmas" Msc, 2014.	Pouria Mirsadegh	2014
"Decreasing Energy loss in a plasma filled waveguide"	Zahra Golabgir	Sep 21, 2014.
"Dispersion relation and growth rates of three wave interaction in circular plasma waveguide	Tahereh Moradi	2015
, "Electron acceleration by magnetized plasma channel", Msc, 2015.	S. M. Mousavi	2015
, "Dispersion relation of electromagnetic wave in the interaction of relativistic electron beam with dielectric waveguide"	Ali Reza Rostami	2015
"Surface waves in magnetized quantum electron-positron plasmas" Msc, 2014.	Pouria Mirsadegh	2014
"Decreasing Energy loss in a plasma filled waveguide"	Zahra Golabgir	Sep 21, 2014.