Curriculum Vitae
Mahdi Momeni

Personal Data:

- **Surname:** Momeni
- **Name:** Mahdi
- **Gender:** Male
- **Date and Place of Birth:** 26 June 1975, Farooj,Iran
- **Nationality:** Iranian
- **Marital Status:** Married
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Education:

- B.S. in Physics: 1994-1999, University of Kerman,Kerman-Iran.
- M.S. in Solid State physics: 1999-2002, University of Tabriz,Tabriz-Iran.
- PhD. in Plasma Physics: 2002-2008, University of Tabriz, Tabriz-Iran & Max- PlanckInstitute ,München, Germany

Visits:

- Max Planck Institute for Plasma Physics, München, Germany, 10 Jan 2005-10 Aug2006.

Research Activities:

●Title of Doctorate Thesis :

Study of linear and nonlinear phenomena in two or many-layer plasma (English Version).
Supervisors: Dr. **Mahmood Moslehi-Fard**(University of Tabriz, Iran), Prof. **Jafarmahmoodi**(Institute for Studies in Theoretical Physics and Mathematics (IPM)), Prof. **Wolf-Christain Müller** (Max Planck Institute, München, Germany).

Title of Post-Graduate Thesis:

Study of electron transport in n-type InSb single crystals in the temperature range 90-400K. Supervisor: Prof. **Hassan Bidadi**(University of Tabriz, Tabriz, Iran).

Publications:

1) **The investigation of a two–layer fluid soliton pair using phase plane analysis,** Czech. J. Phys. 54,39 (2004), M. Momeni, M. Moslehi–Fard, H. Alinejad and J.Mahmoodi.
2) **A Van der Pol-Mathieu equation for the dynamics of dust grain charge in dustyplasmas,** J. Phys. A: Math. Theor. 40(24), F473-F481(2007), M. Momeni, I. Kourakis, M. Moslehi-Fard and P.K.Shukla.
3) **Probability distributions of turbulence energy,** Physical Review E, 77,1 (2008), M. Momeni and W-CMüller.
4) **Fractality feature in incompressible three-dimensional magnetohydrodynamic turbulence,** Cent. Eur. J. Phys. 6(3), 759-764, (2008), M. Momeni and M. Moslehi-Fard. **5) Statistical isotropy of magnetohydrodynamic turbulence,** Phys. Scr. T131 (October 2008) 014004, M. Momeni and N.Mahdizadeh
6) **Non-Gaussian Statistics of Oil Pricing Time-Series: A Case Study,** Fractals, 4,25(2009). M.

Momeni, I. Kourakis

7) **Statistical analysis of the magnetic and velocity field fluctuations for the solarwind,** Applied Physics Research, 4, 3(2012), M. Momeni**.**
8) **Linear and nonlinear electromagnetic waves in a magnetized quantum electron-positron plasma,** International Journal of Modern Physics C, 26(2015), M.Momeni.
9) **Linear study of Rayleigh-Taylor instability in a diffusive quantum plasma,**Physicsof Plasmas, 20(2013), M.Momeni.
10) **Experimental investigation of the effect of insulator sleeve length on the time topinch and multipinch formation in the plasma focus facility,** Journal of Theoretical and Applied Physics, 11(2017), M. Momenei, Z. Khodabakhshei, N. Panahi, M. A.Mohammadi.
11) **Resonance absorption of intense short laser pulse in near critical inhomogeneous plasma,** Waves in Random and Complex Media, 10(2018), M. Hashemzadeh, S. M. Baki, M. Momeni& A. R.Niknam
12) **Studying the effects of plasma produced species on the optical characteristics and bonding structure of diamond-like carbon films deposited by direct current unbalanced magnetron sputtering,** Materials Chemistry and Physics, 229 (2019), SaeidKhodadadi Najaf Abadi , Seyed Iman Hosseini , Mahdi Momeni , HadiKhaksaran.
13) **Elevated expression of diosgenin-related genes and stimulation of the defense system in Trigonellafoenum-graecum (Fenugreek) by cold plasma treatment,** Scientia Horticulturae, 271(2020), Ehsan Ebrahimibasabi, Amin Ebrahimi, Mahdi Momeni, Mohammad rezaAmerian
14) **Comparative Study of Histological Change After Local Treatments with Zinc Oxide, Infrared Rays, Ultraviolet Rays, and Cold Plasma in Rat Model of Diabetic Foot,** INDIAN JOURNAL OF SURGERY, 2020, Maryam Amini, AlirezaJahandideh, Pouria Dehghanpisheh, Mahdi Momeni, Ahmad Asghari.

Master Thesis Supervision:

1) Effect of External Magnetic Field on Resonance Absorption in Laser-Plasma Interaction,H.

Goroee

2) The effect of pressure and type of gas on the time of pinching in the focal plasma device,P, Enayati
3) Investigation of Electron Acceleration in the Field of the Sequence and itsWavelength Influencing the Plasma Laser Interaction, Y.Abil
4) Investigating the effect of cold pressed seed pre-treatment on growth and yield of bean-worm in competition with weeds, R.Vaziri
5) Investigation of resonance absorption in sub-dense plasmas in the presence of high intensity electromagnetic waves, S. M.Baki
6) Investigation of the optical and structural properties of quasi-diamond-like carbon films by magnetic direct sputtering, S. K.Najafabadi
7) Study of the rayleigh- taylor Instability in Quantum Magnetic Plasmas in the Presence ofan External Magnetic Field, F.Zamandi
8) Investigation of shock waves in multi-component plasmas in the presence of viscosity effects, F.Mahmoudiara
9) Studying plasma parameters such as density, electron temperature, and plasma potentialin an electrical discharge, F.Fallahi
10) Investigation of insulator length on x-ray energy output from focal plasma device, J.Sharif zadeh
11) Study of magnetized solitons in quantum plasmas, R.Rezaee
12) Investigation of excited waves in a dusty plasma, SH.Bahrami
13) Dynamic behavior of electromagnetic waves in electron-positron plasmas, K.Taravideh
14) Investigating the effect of insulation height on plasma formation time at differentvoltages and pressures in the focal plasma device, Z.Khodabakhshi
15) Study of how to amplify electromagnetic waves using cyclotron radiation, A.Saeedi
16) Statistical study of cluster parameters of spatial plasmas using solar wind data, E. Hajiabadi
17) Study of the Effects of Electron Spin on Dynamic Properties of Quantum MagneticPlasmas, N.Nasiri
18) The study of the linear and nonlinear behavior of quantum plasmas in the range ofhigh frequencies, V.Najafi

Seminars:

1) The investigation of a two-layer fluid soliton pair using phase plane, University of Tabriz,Tabriz-Iran(2004).

2) Chaotic behavior of charge varying dust grains in plasma, University of Tabriz,Tabriz-Iran(2004).

3) Dynamical analysis of two coupled parametrical excited van-der Pol oscillator, University ofTabriz,Tabriz-Iran(2004).

Workshops:

1) Low Temperature Plasma &Their Applications, University of Tabriz,Iran(2003).

2) Wave and turbulence in plasma, University of Tabriz, Iran(2004).

3) Autumn College on Plasma Physics, Abdus Salam ICTP Trieste –Italy(2005).

4) Joint ICTP-IAEA College on Plasma Physics (smr2369), Abdus Salam ICTP Trieste –Italy (2012).

Conferences :

1) Study of electron transport in n-type InSb single crystals in the temperature range 90- 400K", Annual Physics Conference of Iran & 6th Gathering of Physics Student, Teacher Training University of Sabzevar, Iran,(2001).

2) The investigation of a two–layer fluid soliton pair using phase planeanalysis, 21 Symposium on Plasma Physics and Technology**,** Praha Czech Republic (2004).

3) A Mathieu equation for dust charge dynamics in multi-component dusty plasmas 13th International Congress on Plasma Physics, Kiev,Ukraine(2006).

4) Nonlinear dust charge fluctuations in dusty (complex plasmas: a Van der Pol-Mathieu model equation, 33th EPS conference on plasma physics, Rome, Italy(2006).

5) Monofractality and multifractality feature in incompressible three-dimensional magnetohydrodynamic turbulence, XII LatinamericanWorkShop on Plasma Physics,Simon Bolivar University, Caracas- Venezuela(2007).

Skills:

Computing:

- Methods of simulation in plasma physics, especially finite differential and spectralmethod.
- Data processing abilities: Analysis of Stochastic Processes like fractal properties of the process, Finding effective Langavien and Fokker planck equations and Levy and Casting model.
- Programing in Fortran 90, C++, Matlab, Maple, Origin,IDL.

Laboratory abilities:

- Ability to work with high voltage equipment: Glow discharge tube, Corona Discharge,Plasma Focus Device, DBD,PECVD
- Ability to work with Thin-film production equipment: DC and RF sputtering, PLD withQ-switched Nd:YAG Laser,LIPS
- Operating Systems: High speed camera, LIBS spectrometer, Micro RamanSpectrometer

Research Theoretical Interests:

- Mathematical Modeling, Nonlinear Dynamics, statistical mechanics &Applications.
- Turbulence and Chaos problem in HD and MHD plasma and recently in economy-physicsand climate changesprediction.
- Investigation on the turbulence structures, Self-Similarity and Intermittency, estimate ofPDFs and SF by direct numerical simulation, direct measurement (Solar wind, Tokamak,…).
- Nonlinear Wave Propagation in Plasmas.
  Study of nonlinear phenomenon inplasma.
- Dusty Plasmas (Complex plasmas) and quantumplasmas.

Experimental work :

My laboratory research started at Tabriz University in 1999 when I was working on my M.Sc thesis. The title of my M.Sc thesis was " Study of electron transport in n-type InSb single crystals. Meanwhile my laboratory experience includes the following:

- Work with multi-meters, oscilloscopes, cryostat, thermometer, high and low voltage power supply and liquidnitrogen.
- Design and manufacturing of cryostat and magnet, preparing the InSb samples, ohmcontact andetc…
- Preparation of the experimental results following the guidelines ofsupervisor.
- Working as part of a team on small condensed matter and plasmaprojects.

My doctorate period started in 2001 and lasted until 2006. Although the subject of my thesis was the theory, my experimental work continued which is described as:

- Assisted in the set up plasma focus and RF sputtering in Tabriz university, work experienceand runningthem.

And finally I was jointed the Department of Physics at the Shahrood university of technology, as a lecturer in Plasma Physics in 2007. My experimental work in the laboratory is as follows:

- The design and feasibility of launching the first plasma laboratory at Shahrood Universityof Technology in2010
- Assisted in making sure that the lab was safe at alltimes.
- Preparing and set up the equipment for the plasma laboratory such as: RF Sputtering,PECVD, Jet Plasma, DBD, Glow discharge tube, Corona Discharge, Plasma Focus Device, LaserND:YAG
- Assisted in setting up various students projects and completing all of the necessarypaperwork
- Guiding the students in plasma testing as well as the use of various laboratoryequipment.

TEACHING EXPERIENCE:

Shahrooduniversity and Technology 2006-Continues

Mathematical Physics
Fluid mechanics
Dynamics
Plasma Physics
Plasma Lab
Modern Physics Lab
Electricity Lab
Mechanic Lab

References:

1) Prof. Wolf-ChristianMüller
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2) Prof. YannisKourakis
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3) Prof.JafarMahmoodi
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4) Dr. MahmoodMoslehi-Fard
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Extra Curricular Activities:

1) Interested in mountain climbing, swimming andtennis.
2) Enjoying going to cinema and listeningmusic.
3) Reading ancienthistory.