

## ***CURRICULUM VITAE***

### **+ PERSONAL DATA**

**Surname:** Cheraghchi  
**First name:** Hosein  
**Place of birth :** Sarakhs - Iran  
**Date of birth :** Aug, 11, 1972  
**Nationality:** Iranian



### **+ ADDRESS**

Permanent: **School of Physics, Damghan University, Damghan, Iran**

+ Email: *cheraghchi at du. ac.ir*

### **+ CAREER**

**B.Sc. 1990-1994, Shiraz University, Shiraz, Iran**

**M.Sc. 1994-1996, Ferdowsi University of Mashad, Mashad, Iran**

**Lecturer, 1997-2001, Damghan University of Basic Science, Damghan, Iran**

**Ph.D. 2001 -2007, Sharif University of Technology, Tehran, Iran**

**Assistant Professor, Sep 2007-Jun 2016, School of Physics, Damghan University**

**Associate Professor, July 2016-Sep 2018, School of Physics, Damghan University**

**Associate Professor, Oct 2018-Sep 2020, Physics Department, Iran University of Science and Technology**

**Associate Professor, Oct 2020-yet, School of Physics, Damghan University**

### **+ RESEARCH INTERESTS**

**Condensed Matter Physics:**

- *Quantum Transport and magnetic properties of Topological insulators*
- *Induced Topological Phases in periodically driven systems*
- *Non-Equilibrium Electronic Transport through Mesoscopic systems*
- *Transport through monolayer and bilayer graphene+CNTs*
- *Anderson Localization, localization properties in disordered systems*



## JOURNAL PAPERS

1. **H. Cheraghchi**, S. M. Fazeli, K. Esfarjani, "Localization - delocalization transition in a one-dimensional system with long-range correlated off-diagonal disorder", **Phys. Rev. B.** 72. 174207 (2005).
2. **H. Cheraghchi**, S. M. Fazeli, " Statistical properties of a localization-delocalization transition induced by correlated disorder", **Journal of Statistical Mechanics: Theory and Experiment**, P1004, (2006).
3. **H. Cheraghchi**, "Scaling properties of one-dimensional off-diagonal disorder", **Journal of Statistical Mechanics: Theory and Experiment**, P1006, (2006).
4. A. Esmailpour, **H. Cheraghchi**, P. Carpena, M. R. Rahimi Tabar, "Metal-Insulator Transition in a ternary model with long-range correlated disorder", **Journal of Statistical Mechanics: Theory and Experiment**, P09014, (2007).
5. **H. Cheraghchi**, K. Esfarjani, "Negative differential resistance in molecular junctions: application to graphene ribbon junctions ", **Phys. Rev. B.** 78. 085123 (2008).
6. **H. Cheraghchi**, K. Esfarjani, "Negative differential resistance in carbon nanotube nanojunction ", unpublished, (2009).
7. **H. Cheraghchi**, H. Esmailzade, "Gate-Induced Switch of Even Zigzag Graphene Nanoribbons and its charging effects", **Nanotechnology**, 21, 205306, (2010).
8. **H. Cheraghchi**, " Nonlinear transport through ultra-narrow zigzag graphene nanoribbons: non-equilibrium charge and bond currents", **Physica. Scripta.** 84, 015702(2011).
9. **H. Cheraghchi**, A. A. Irani, S. M. Fazeli, R. Asgari, "Metallic phase of disordered graphene superlattices with long-range correlations", **Phys. Rev. B.** 83, 235430 (2011).
10. S. Khazaei, M. Khazaei, **H. Cheraghchi**, V. Daadmehr, Y. Kawazoe, "Considering the effect of different arrangements of pentagons on density of states of capped carbon nanotubes", **Physica B.** 406, 3885–3890 (2011) .
11. **H. Cheraghchi**, F. Adinehvand, "Spin polarization and magnetoresistance through a ferromagnetic barrier in bilayer graphene", **Journal of Physics: Condensed matter**, 24, 045303 (2012).
12. V. Derakhshan, **H. Cheraghchi**, " Edge proximity-induced magnetoresistance and spin polarization in ferromagnetic gated bilayer graphene nanoribbon", **Journal of Magnetism and Magnetic Materials**, 357, 29-34 (2014).
13. **H. Cheraghchi**, F. Adinehvand, "Control over band structure and tunneling in bilayer graphene induced by velocity engineering", **Journal of Physics: Condensed matter**, 26, 015302 (2014).

14. **H. Cheraghchi**, "Non-adiabatic pure spin pumping in zigzag graphene nanoribbons with proximity induced ferromagnetism", **Journal of Magnetism and Magnetic Materials**, 264, 264-269 (2015).
15. **H. Cheraghchi**, *H. Esmailzadeh, A. G. Moghaddam*, "Superconducting electron and hole lenses", **Phys. Rev. B.** 93, 214508 (2016).
16. *M. Shiranzaei, H. Cheraghchi, F. Parhizgar*, "Effect of Rashba splitting on RKKY interaction in topological insulator thin films", **Phys. Rev. B.** 96, 024413 (2017).
17. *F. Adinehvand, H. Cheraghchi*, "Effect of asymmetric Fermi velocity on trigonally warped spectrum of bilayer graphene", **J. Phys. Chem. Solids**, 107, 118 (2017).
18. *M. Shiranzaei, F. Parhizgar, J. Fransson, H. Cheraghchi*, " Impurity scattering on the surface of topological insulator thin films", **Phys. Rev. B.** 95, 235429 (2017).
19. *T. Sabze, H. Cheraghchi*, "Effect of Chiral selective tunneling on quantum transport in magnetic topological insulator thin films", **Phys. Rev. B.** 96, 155440 (2017).
20. *M. Shiranzaei, J. Fransson, H. Cheraghchi, and F. Parhizgar*, " Nonlinear spin susceptibility in topological insulators", **Phys. Rev. B.** 97, 180402 (**Rapid Communication**) (2018).
21. **H. Cheraghchi**, *T. Sabze*, " Spin polarization in nanojunctions of quantum anomalous Hall insulator", **Journal of Magnetism and Magnetic Materials**, 513, 166923 (2020). (**IPM in Acknowledgement**)
22. *M. Yarmohammadi, H. Cheraghchi*, " Effective low-energy RKKY interaction in doped topological crystalline insulators", **Phys. Rev. B.** 102, 075411 (2020). (**IPM in Acknowledgement**)

#### **PREPRINTS**

23. **H. Cheraghchi**, *M. Yarmohammadi*, "Anisotropic ferroelectric distortion effects on the RKKY interaction in topological crystalline insulators", **submitted**, Under Review at *Scientific Reports*. (**IPM as Affiliation**) (2020)
24. *S. Dabiri, H. Cheraghchi, A. Sadeghi*, "Light-induced topological phases in thin film of magnetically doped topological insulators", **submitted**, Under Review at *Phys. Rev. B*. (**IPM as Affiliation**) (2020)
25. *F. Askari Shahid, H. Cheraghchi*, "Topological properties and edge states in a driven modified dimerized chain", **arXiv:1709.05829** (2017).
26. *M. Azadparvar, H. Cheraghchi*, "Straintronics in graphene nanoribbons", **arXiv:1912.02017**, (2019).

#### **IN PREPARATIONS**

27. M. Yarmohammadi, H. Cheraghchi, “*Tuning FM-AFM phase transition in doped gapped TCIs*”.
28. S. Dabiri, H. Cheraghchi, A. Sadeghi, “*Engineering of topological phases in driven topological insulator thin films: Structural inversion asymmetry effect*”.

#### **BOOK**

*Book title: Graphene Simulation (ISBN 978-953-308-60-2, Publisher: InTech)*  
*Chapter title: Nonlinear Transport through Ultra Narrow Zigzag Graphene Nanoribbons*

#### **APPOINTMENTS & AWARDS & SERVICES**

1. **Resident Researcher**, Institute for Research in Fundamental Sciences (IPM), School of Physics, (2020-yet), Tehran, Iran.
2. **Elected member of the steering committee of Condensed Matter Physics, Physical Society of Iran (2019-2022).**
3. **The Chair of Scientific Committee, 14<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran, Chamran University, Ahwaz, 6-7 Feb, 2018.**
4. **Regular Associate member of the Abdus-Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, (2014-2019).**
5. **Scientific Committee member, 13<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran, Rajaee University, Tehran, 4-5 Feb, 2017.**
6. **Head of School of Physics, Damghan University (Mar 2015-Mar 2016).**
7. **Short- Term Visit, Condensed Matter and Statistical Mechanics Section, ICTP, Trieste, Italy, 20 July- 15 Aug 2012.**
8. **Scientific Committee member of “national conference on computational science”, Damghan University, Damghan, 6-7 Sep, 2012.**
9. **Long- Term Visit, School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, 20 Oct 2010 -20 March 2011.**
10. **Associate Director for Graduated Studies, Damghan University, 2010-2012.**
11. **Young Collaborator in the Abdus-Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, (Jun-Sep 2003).**

12. Head of School of Physics, Damghan University of Basic Sciences , (Sep 1998-Sep 2001).
13. Honored Lecturer, Damghan University of Basic Sciences, (2000).
14. Honored Undergraduate Student, Physics Department, Shiraz University, (1994).

## INVITED SPEAKER & TALKS

1. Title of Talk : "[Transport and Magnetic properties of Topological Insulator Thin films](#)", School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, (18<sup>th</sup> Sep 2019). (Invited Talk)
2. Title of Talk: "[Topological Insulators](#)", Iran University of Science and Technology, Tehran, (20<sup>th</sup> May 2019). (Invited Talk)
3. Title of talk : "Effect of Chiral selective tunneling on quantum transport in magnetic topological insulator thin films", *The second Autumn Meeting of the Physics Society of Iran*, Physics Department, Tehran University, Tehran, 23 Nov (2017). (Contributed Speaker)
4. Title of Talk : "Nonadiabatic charge and spin pumping through driven quasi-one dimensional systems", **Conference on Many-Body Systems**", Khaje Nasir Toosi University of Technology, Tehran (12 Nov 2015). (Keynote Speaker)
5. (<http://psi.ir/farsi.asp?page=mbs94>).
6. **Keynote Speaker**: "Electronics and Spintronics in Graphene", **12<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran**, Isfahan University of Technology, Isfahan (28-29 Jan 2015). (<http://www.psi.ir/farsi.asp?page=cmc12>)
7. Title of Talk: "[Spin and Charge transport in Ferromagnetic Graphene](#)", **Recent Progress in Two-dimensional Systems**, School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, (9<sup>th</sup> Oct 2014) (<http://physics.ipm.ac.ir/conferences/rpts/title.jsp>). (Invited Speaker)
8. Title of Talk: "The effect of velocity modulation on band structure and tunneling in bilayer graphene", **Workshop on "Quantum transport in graphene** (In memory of late Prof. Malek Zareyan, 1971-2014), School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, (24<sup>th</sup> Apr 2014) (<http://physics.ipm.ir/conferences/qtg/index.jsp>). (Invited Speaker)
9. Title of Talk: "Transport through Graphene Nanoribbons and Disordered Graphene Superlattice ", **Workshop on Graphene and Topological Insulators**, School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, (29-30 Sep, 2010) (<http://physics.ipm.ac.ir/conferences/gtic/index.jsp>). (Invited Speaker)
10. Title of Talk: "Negative Differential Resistance in Graphene Nanoribbon Junctions", **National Conference on strongly correlated electronic systems**, Physics Department, Sharif University of Technology, Tehran (25 Dec 2008). (<http://spin.cscm.ir/sces08/program.html> ) (Contributed Speaker)

## CONFERENCE PAPERS

1. T. Sabze, H. Cheraghchi, "**Chiral spin polarization in topological insulator thin film**". *14<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran,* ", *Shahid-Chamran University, Ahwaz, 6-7 Feb, (2019).* (Talk)
2. M. Azadparvar, H. Cheraghchi, "**Investigation IV Characteristics Curve Zigzag Graphene Nanoribbons Under Uniaxial Strain**", *14<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran,* ", *Shahid-Chamran University, Ahwaz, 6-7 Feb, (2019).* (Selected Poster)
3. F. Adinehvand, F. Parhizgar, H. Cheraghchi, "**Topography-Control of bilayer graphene spectrum by using illuminated Terahertz field**", *Computational Physics Conference, Shahid Beheshti University, Tehran, 31 Jan -1 Feb (2017).*
4. M. Azadparvar, H. Cheraghchi, "**Negative differential resistance in transistors based on zigzag phosphorene nanoribbons**", *Iranian Conference on Mathematical Physics, Qom University of Technology, 27 Dec (2017).*
5. F. Adinehvand, H. Cheraghchi, F. Parhizgar, "**Effect of irradiated laser polarization on bilayer graphene spectrum**", *Iranian Conference on Mathematical Physics, Qom University of Technology, 28 Dec (2017).*
6. H. Cheraghchi, T. Sabze, "**Effect of Chiral selective tunneling on quantum transport in magnetic topological insulator thin films**", *Conference on Weyl Fermions in Materials, ICTP, Trieste, Italy, 23-27 Oct (2017).*
7. S. Khodamoradi, H. Cheraghchi, "**Bending-induced spin splitting of band structure in zigzag phosphorene nanoribbons**", *24<sup>th</sup> Spring conference on physics, IPM, Tehran, 24-25 May (2017).*
8. T. Sabze, H. Cheraghchi, "**Quantum transport through barriers in topological insulator thin films**", *13<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran,* ", *Rajae University, Tehran, 4-5 Feb, (2017).*
9. M. Shiranzaee, F. Parhizgar, H. Cheraghchi, "**Rashba-splitting effect on indirect exchange interaction in Topological Insulator thin films**", *13<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran,* ", *Rajae University, Tehran, 4-5 Feb, (2017).* (Talk)
10. S. Amiri, H. Cheraghchi, "**The effect of impurity proximity on the band structure of phosphorene**", *13<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran,* ", *Rajae University, Tehran, 4-5 Feb, (2017).*
11. F. Adinehvand, H. Cheraghchi, "**Deformation-induced by asymmetric Fermi velocity on trigonally warped spectrum of bilayer graphene**", *The 23<sup>th</sup> spring conference of physics, Institute for research in fundamental sciences (IPM), Tehran (18-19 May 2016).* (Talk)
12. M. Shiranzaee, F. Parhizgar, H. Cheraghchi, "**Single impurity effect on Topological Insulator thin films**", *The 23<sup>th</sup> spring conference of physics, Institute for research in fundamental sciences (IPM), Tehran (18-19 May 2016).*
13. S. Amiri, H. Cheraghchi, M. Azadparvar, "**Band structure and density of states in black phosphorus sheets in the presence of impurity**", *"*, *22<sup>th</sup> Annual IASBS Meeting on Condensed Matter Physics, Zanjan, (26-27, May 2016).*

14. S. Amiri, H. Cheraghchi, "**Spin polarization in Phosphorene band structure induced by impurities**", The 23 th spring conference of physics, Institute for research in fundamental sciences (IPM), Tehran (**18-19 May 2016**).
15. H. Cheraghchi, "**Pure spin pumping in zigzag graphene nanoribbons with proximity induced ferromagnetism**", *Conference on Frontiers of Nanoscience* 24 August - 1 September **2015**, ICTP, Trieste, Italy.
16. F. Adinehvand, F. Askari, H. Cheraghchi, "**Band structure of graphene nanoribbons in presence of irradiated polarized light**", 21 th Annual IASBS Meeting on Condensed Matter Physics, Zanjan, (**27-28, May 2015**).
17. Z. Fallahi, H. Cheraghchi, M. Ardianian, S. Rouhani, "**Determination of the roughness exponent and fractal analysis of ZnO thin film deposited by spray pyrolysis**", 12<sup>th</sup> Conference on Condensed Matter Physics, Physical Society of Iran, Isfahan University of Technology, Isfahan (**28-29 January 2015**).
18. E. Rahmati, H. Cheraghchi, "**Electron scattering in the ferromagnetic graphene nanoribbons(GNRs) by magnetic impurities** ", 20th Annual IASBS Meeting on Condensed Matter Physics, Zanjan (**28-30, May 2014**).
19. F. Pasha, H. Cheraghchi, "**Quantum pumped current in graphene nanoribbons**", 20th Annual IASBS Meeting on Condensed Matter Physics, Zanjan (**28-30, May 2014**). (Selected Poster).
20. H. Cheraghchi, F. Adinehvand, "**Control over band structure and tunneling in bilayer graphene induced by velocity engineering**", the 5<sup>th</sup> International Conference on Nanostructures, Kish Island, Iran (**6-9 March 2014**).
21. M. Massah, H. Cheraghchi, S. Rouhani, "**Determination of the roughness exponent and fractal dimension of iso-height contours for ZnO thin films**", Annual Physics Conference of Iran, Birjand University, Birjand (**26-29 Aug 2013**).
22. M. A. Keshtan, H. Cheraghchi, '**Simulation of generation of current vortices in a zigzag monolayer Graphene nanoribbon at the presence of strong external magnetic field using bond current formalism**', *Annual Physics Conference of Iran, Yazd University, Yazd*, (**21-24 Aug 2012**).
23. M. Nabavi, H. Cheraghchi, '**Creation of energy gap in graphene antidot lattices**', *Annual Physics Conference of Iran, Urmia University, Urmia*, (**5-7 Sep 2011**).
24. M. Nabavi, H. Cheraghchi, '**Zero mode dependence on the hole structure of antidot graphene lattices**', *Annual Physics Conference of Iran, Urmia University, Urmia*, (**5-7 Sep 2011**).
25. M. Nabavi, H. Cheraghchi, '**The effect of unit cell geometry on the stability and band structure of graphene antidot lattices**', *Annual Physics Conference of Iran, Urmia University, Urmia*, (**5-7 Sep 2011**).
26. Z. Akbarinejad, H. Cheraghchi, '**Magnetization and stability of triangular graphene quantum dots with hydrogen edged saturation in the presence and absence of Fluorine impurity**', *Annual Physics Conference of Iran, Urmia University, Urmia*, (**5-7 Sep 2011**).
27. Z. Akbarinejad, H. Cheraghchi, "**Stability and magnetization of triangular graphene quantum dot with zigzag edges**", *The 18<sup>th</sup> spring conference of physics, Institute for Research in Fundamental Sciences (IPM), Tehran*, (**18-19 May 2010**)
28. V. Derakhshan, H. Cheraghchi, S. A. Ketabi, "**Transport gap and transport properties of bilayer graphene nanoribbin with the zigzag edges**", *The 10<sup>th</sup> conference on Condensed Matter , Shiraz University, Shiraz, Iran*, (**26-27 Jan 2011**). (Talk)

29. F. Adinehvand, H. Cheraghchi, "**Spin polarization in bilayer graphene located in the proximity of magnetic insulator**", *The 17<sup>th</sup> spring conference of physics, Institute for Research in Fundamental Sciences (IPM), Tehran, (19-20 May 2010)*
30. F. Adinehvand, H. Cheraghchi, "**Conductance of Dirac quasi-particles through bilayer graphene superlattice**", *Annual Physics Conference of Iran, Bu-Ali Sina University, Hamedan , (11-14 Sep 2010).*
31. A. A. Irani, H. Cheraghchi, S. M. Fazeli, "**Resonant states in conductance of graphene superlattice with correlated disorder on potentials**", *Annual Physics Conference of Iran, Bu-Ali Sina University, Hamedan , (11-14 Sep 2010).*
32. H. Esmailzade, H. Cheraghchi, "**Nonlinear electronic transport through zigzag graphene nanoribbon with asymmetric effects**", *The 16<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (27-28 May 2010).*
33. F. Adinehvand, H. Cheraghchi, "**Electronic transport through bilayer superlattice graphene**", *The 16<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (27-28 May 2010).*
34. A. A. Irani, H. Cheraghchi, S. M. Fazeli, "**Metal-insulator transition in the presence of long-range correlated disorder**", *The 16<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (27-28 May 2010).*
35. H. Cheraghchi, H. Esmailzade, "**Nonlinear Electronic Transport through Zigzag Graphene Nanoribbons**", *Spring college on computational nanoscience, 17 - 28 May 2010, ICTP, Trieste, Italy.*
36. H. Cheraghchi, A. A. Irani, S. M. Fazeli, "**Localization-delocalization transition through graphene superlattice with long-range correlated disorder on potential barriers**", *Advanced workshop on Anderson localization, nonlinearity and turbulence: a crossfertilization* , 23 August - 3 September 2010, ICTP, Trieste, Italy.
37. A. A. Irani, H. Cheraghchi, S. M. Fazeli, '**Conductance through Superlattice Graphene with Disorder Potential Barriers**', *The first National Conference on Role of Science in Nanotechnology, Imam Hossein University, (9-10 Dec 2009).*
38. A. A. Irani, H. Cheraghchi, S. M. Fazeli, '**Electronic Transport through Disordered Superlattice Graphene**', *The first National Conference on Role of Science in Nanotechnology, Imam Hossein University, 9-10 Dec (2009).*
39. A. Habibi, H. Cheraghchi, "**Statistical Properties and conductance of rough graphene sheets**", *Annual Physics Conference of Iran, Isfahan University of Technology, 15-18 Aug (2009).*
40. S. Hosseini, H. Cheraghchi, "**Edge Disorder Effects on Spectrum of Conduction Modes in Graphene Nanoribbons**", *Annual Physics Conference of Iran, Isfahan University of Technology, 15-18 Aug (2009).*
41. S. Khazaei, M. Khazaei, V. Daadmehr, H. Cheraghchi, "**Calculating the density of states for carbon nanotubes with different tip geometries using Green's function approach**", *Annual Physics Conference of Iran, Isfahan University of Technology, 15-18 Aug (2009).*
42. H. Esmailzade, H. Cheraghchi, "**Electronic Switch made by Even Graphene Nanoribbons**", *The 15<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (21-22 May 2009).*



43. S. Hosseini, **H. Cheraghchi**, A. Habibi, "**Anderson Localization in Graphene Sheets**", *The 9<sup>th</sup> Condensed Matter Conference*, Chamran University, Ahwaz, Iran, (4-5 Feb 2009).
44. A. H. Irani, **H. Cheraghchi**, "**Graphene sheets as a direction and energy of electronic filter**", *The 9<sup>th</sup> Condensed Matter Conference*, Chamran University, Ahwaz, Iran, (4-5 Feb 2009).
45. H. Esmailzade, **H. Cheraghchi**, "**Electronic Transport through Armchair Graphene Nanoribbons**", *The 9<sup>th</sup> Condensed Matter Conference*, Chamran University, Ahwaz, Iran, (4-5 Feb 2009)
46. A. Habibi, **H. Cheraghchi**, "**Anderson Localization in the Square and Cubic Lattices**", *The 9<sup>th</sup> Condensed Matter Conference*, Chamran University, Ahwaz, Iran, (4-5 Feb 2009)
47. **H. Cheraghchi**, K. Esfarjani, "**Negative Differential Resistance in Graphene Nanoribbon Junctions**", *National Meeting of strongly Correlated Systems, Sharif University of Technology, Tehran, 26 Dec (2008)*. Invited Speaker.
48. **H. Cheraghchi**, A. Habibi, "**Anomalous properties of localization in one-dimensional disordered models**", *Annual Physics Conference of Iran, Kashan University, Kashan, 26-29 Aug (2008)*.
49. **H. Cheraghchi**, K. Esfarjani, "**Scaling properties of one-dimensional off-diagonal disorder**", as a Poster in *College on Physics of Nano-Devices, the Abdus Salam International Centre for Theoretical Physics (ICTP)*, Miramare, Trieste, Italy (10-21 July 2006). [cond-mat/0603294](#)
50. V. Chegeni, **H. Cheraghchi**, M. R. Sarkardei, "**The calculation of the eigenvalues spectrum of atoms with the full-filled electron shells in the Restricted Hartree-Fock Approximation**", *The 12<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (25-26 May 2006)*.
51. **H. Cheraghchi**, K. Esfarjani, "**Scaling properties of one-dimensional off-diagonal disorder**", *The 12<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (25-26 May 2006)*.
52. **H. Cheraghchi**, S. M. Fazeli, K. Esfarjani, "**Metal-Insulator Transition in one dimensional systems with long-range correlated hopping disorder**", *The 12<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (25-26 May 2006)*. [Cond-mat/0507274](#)
53. **H. Cheraghchi**, S. M. Fazeli, K. Esfarjani, "**Localization Properties of one dimensional correlated off-diagonal disorder**", as a Poster in (a) *Conference on Strongly Interacting Systems at the Nanoscale (8-12 Aug 2005)* (b) *School on Quantum Phase Transitions and Non-Equilibrium Phenomena in Cold Atomic Gases (11-22 July 2005)*, *the Abdus Salam International Centre for Theoretical Physics (ICTP)*, Miramare, Trieste, Italy. [condmat/0507274](#)
54. **H. Cheraghchi**, K. Esfarjani, "**Delocalization states in one dimensional system with special configuration of off-diagonal elements**", *The 7<sup>th</sup> Condensed Matter Conference*, Elmo-Sanat university of Iran, Tehran, Iran, (25-26 Jan 2005).
55. **H. Cheraghchi**, K. Esfarjani, "**The effect of disorder on the density of states of Carbon Nanotube by Coherent Potential Approximation (CPA)**", *Annual Physics Conference of Iran, Power and Water University of Technology (Shahid Abbaspour), Tehran, Iran, (23-26 Aug 2004)*.

56. **H. Cheraghchi**, K. Esfarjani, " **Long range coulomb interaction in Quantum Wire** ", *The 10<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (20-21 May 2004)*.
57. **H. Cheraghchi** , K. Esfarjani , M. Mardani , " **Effect of Disorder and External Potential on the Electron Transport and I-V Curve of a Quantum Dot** ",*The 9<sup>th</sup> Gava-Zang meeting on condensed matter physics, Institute for advanced studies in basic science, Zanjan, Iran (8-9 May 2003)*.
58. K. Esfarjani, **H. Cheraghchi** , A. Farajian , " **Effect of Disorder on Carbon Nanotube** ", *Research Project in Sharif University of Technology, (16 Mar 2003)*.
59. **H. Cheraghchi** , K. Esfarjani , " **Investigation of Disorder Effect on Density of States by CPA** " , *The 6<sup>th</sup> Condensed Matter Conference ,Yazd, Iran, (1 - 2 Feb 2003)*.

## SUPERVISION OF STUDENTS

1. *Hanyeh Esmailzade (M. Sc.) Graduated (July 2009), Thesis: **Electronic Transport Properties in Graphene Nanoribbons**. (Now PhD student at Institute for advanced studies in basic science)*
2. *Somayeh Hosseini (M. Sc.) Graduated (July 2009), Thesis: **Anderson Localization in one and two dimensional systems: application in graphene sheets**. (Now PhD student at Azad University, Science and Research Branch)*
3. *Alireza Habib (B. Sc.) Graduated (July 2009), Thesis: **Roughness and Anderson Localization in Graphene Sheets**. (Now PhD student at Sharif University of Technology)*
4. *Somayeh Khazaei (M. Sc.) Graduated (Feb 2010) Thesis: **Field Emission through Capped Carbon Nanotubes**.(Now PhD student at Matrin-Luther University of Hall Wittenberg, Germany)*
5. *Amirhossein Irani (M. Sc.) Graduated (July 2010) Thesis: **Klein Tunneling in disordered monolayer Graphene Superlattices**. (Diploma at ICTP 2010-2011, Now PhD student at Massey University, New Zealand)*
6. *Fatemeh Adinehvand (M. Sc.) Graduated (Sep 2011) Thesis: **Spin transport through ferromagnetic bilayer graphene junctions**. (Now PhD student at Damghan University)*
7. *Vahid Derakhshan (M. Sc.) Graduated (Sep 2011) Thesis: **Spin polarization and magnetization through bilayer graphene nanoribbons**. (Now Post doc)*
8. *Maryam Nabavi (M. Sc.), Graduated (Feb 2012) Thesis: **Energy band structure and transport properties of graphene antidot lattices**.*
9. *Zahra Akbarinejad (M. Sc.), Graduated (Feb 2012) Thesis: **Stability and magnetization of traingular graphene quantum dot with zigzag edges**.*
10. *Mohammad Mohammadi Keshtan (M. Sc.), Graduated (Sep 2012) Thesis: **Electronic and Thermal Response functions of graphene nanoribbons in the presence magnetic field**.(Now PhD student at Iran University of Science and Technology )*
11. *Mozhdeh Massah (M. Sc.), Graduated (Sep 2013) Thesis: **Study of Statistical and Morphological Properties of ZnO Rough Surfaces Deposited by Spray Pyrolysis**. (Now PhD student at Max-Planck-Institute for the Physics of Complex Systems)*

12. *Fatemeh Pasha* (M. Sc.), Graduated (June 2014) *Thesis: Non-adiabatic Quantum Pumping in Graphene nanoribbons.*
13. *Elham Rahmati* (M. Sc.), Graduated (Feb 2015) *Thesis: Boltzmann Conductivity through Ferromagnetic Graphene Nanoribbons.*
14. *Fatemeh Askari Shahid*, Graduated (Sep 2016) *Thesis: The effect of irradiation on band structure and quantum transport through Carbon structures.*
15. *Saeed Amiri* (M. Sc.), Graduated (Sep 2016) *Thesis: Investigation of the band structure and quantum transport through Phosphorene in the presence of impurity.* (Ph. D. student at Göttingen university)
16. *Shima, Khodamoradi* (M. Sc.), Graduated (Sep 2017) *Thesis: Transport properties of Phosphorene nanoribbons and nano-junctions.*
17. *Fatemeh Adinehvand*, (Ph. D.), Graduated (Feb 2017) *Thesis: Quantum transport and optical conductivity through bilayer graphene in time-periodic and time-independent potentials.*
18. *Mahroo Shiranzaee*, (Ph. D.), Graduated (Sep 2018) *Thesis : Investigation of magnetic response of novel two-dimensional structures to magnetic impurities.* (now post-doc at Uppsala University).
19. *Tahere Sabze*, (Ph. D.), Graduated (Feb 2020) *Thesis: Transport properties of Two-Dimensional Topological Insulators.*
20. *Sajad Dabiri, Malihe Azadparvar* (Ph. D. Students), *Zahra Asgarpour* (M.Sc.Student).

## ✚ INTERNATIONAL CONFERENCES AND WORKSHOPS

1. "Conference on Physics of Defects in Solids: Quantum Mechanics Meets Topology", 9-13 July, (2018), ICTP, Trieste, Italy.
2. "Conference on Weyl Fermions in Materials", 23-27 Oct (2017) ICTP, Trieste, Italy.
3. "Conference on Many-Body-Localization: Advances in the Theory and Experimental Progress", 10-14 July (2017), ICTP, Trieste, Italy.
4. "School on Fundamentals on Quantum Transport", 31 July-4 Aug (2017), ICTP, Trieste, Italy.
5. "Workshop on Fundamentals on Quantum Transport", 7 Aug-11 Aug (2017), ICTP, Trieste, Italy.
6. "School and Workshop on Strongly Correlated Electronic Systems - Novel Materials and Novel Theories", 10 - 21 Aug (2015), ICTP, Trieste, Italy.
7. "Conference on Frontiers of nanoscience", 21 Aug-1 Sep 2015, ICTP, Trieste, Italy
8. "Conference on Non-equilibrium Phenomena in Condensed Matter and String Theory", 30 Jun-4 July 2014, ICTP, Trieste, Italy.
9. "Summer School on Quantum Many-Body Physics of Ultra-Cold Atoms and Molecules", 1-14 July 2012, ICTP, Trieste, Italy
10. "Workshop on Quantum Simulations with Ultracold Atoms", 16-20 July 2012, ICTP, Trieste, Italy.
11. "Advanced School of Recent Progress in Condensed Matter Physics and Strongly Correlated Systems", School of Physics, IPM, Tehran, 27-28 June 2012.
12. "SPRING COLLEGE ON COMPUTATIONAL NANOSCIENCE", 17 - 28 May 2010, ICTP, Trieste, Italy.
13. "ADVANCED WORKSHOP ON"ANDERSON LOCALIZATION,

NONLINEARITY AND TURBULENCE: A CROSS-FERTILIZATION", 23

August - 3 September 2010, ICTP, Trieste, Italy.

14. "Advanced School of Recent Progress in Condensed Matter Physics and Strongly Correlated Systems", School of Physics, IPM, Tehran, 5-9 July 2008.
15. "Workshop on High Performance Computing (HPC08)", School of Physics, IPM, Tehran, February 16-21, 2008.
16. "College on Physics of Nano-Devices", ICTP, Miramare, Trieste, Italy (10-21 July 2006).
17. "Conference on Strongly Interacting Systems at the Nanoscale", ICTP, Miramare, Trieste, Italy (8 - 12 Aug 2005).
18. "Summer School and Miniconference on Dynamical Mean-Field Theory for Correlated Electrons Applications to Real Materials, Extensions and Perspectives", ICTP, Miramare, Trieste, Italy (25 July - 3 Aug 2005).
19. "School on Quantum Phase Transitions and Non-Equilibrium Phenomena in Cold Atomic Gases", ICTP, Miramare, Trieste, Italy (11-22 July 2005).
20. "10<sup>th</sup> Conference on Hopping and Related Phenomena (HRP 10)", ICTP, Miramare, Trieste, Italy (1-4 Sep 2003).
21. ICTP-INFM Conference on " New Frontiers in Nano-Biotechnology: Monitoring Protein Function with Single-Protein Resolusion ", ICTP, Miramare, Trieste, Italy (15-19 July 2003).
22. " Third stig Lundqvist Conference on Advancing Frontiers of Condensed Matter Physics: Fundamental Interactions and Excitations in Confined systems ", ICTP, Miramare, Trieste, Italy (11-15 Aug 2003).
23. Euroconference on "Ab initio Many-body Theory for Correlated Electron Systems ", ICTP, Miramare, Trieste, Italy (25-29 Aug 2003).
24. " Special Course of Computation Methods in Nano Physics of Condensed Matter ", Kashan, Iran, (22-23 May 2002)
25. " The ICTP's Regional Workshop on Computational Condensed Matter Physics ", Isfahan University of Technology, Isfahan, Iran, (15 - 25 Apr 2002).
26. " Pre-workshop on Computational Condensed Matter Physics ", Isfahan University of Technology, Isfahan, Iran (28- 31 Jan 2002).

 **REFERENCES**

- My Ph.D. Supervisor : **Prof . Keivan Esfarjani**, Department of Mechanical Engineering, Virginia University; **Ph. D. Thesis: Transport properties in disordered onedimensional systems and interacting nano contacts**, Physics Department, Sharif University of Technology, (Sep 2007).
- My M.Sc. Supervisor : **Prof . Seyyed Hossein Keshmiri**, Ferdowsi University, Microelectronic Laboratory Research , Faculty of Science ,Ferdowsi University of Mashad ,Mashad , Iran, ( Sep 1997 ); **M.Sc. Thesis:** Investigation of Microstructure and Photoluminescence of Porous Silicon Layers " .

## **TEACHING EXPERIENCE**

1. "**Advanced Quantum Mechanics**", *Course in two semesters, (Graduate) Text Book: "Modern Quantum Mechanics", J. J. Sakurai*
2. "**Special Topics in Condensed Matter Physics**", *Course in one semester, (Graduate) Text Book: Electronic Transport in Mesoscopic Systems, S. Datta, Cambridge University Press, 1995.*
3. "**Quantum Mechanics**" *Course in two semesters, (Undergraduate) Text Book : Quantum Physics, S. Gasiorowicz, John Wiley&Sons, 1996*
4. "**Solid State Physics**" *Course in two semesters, (Undergraduate) Text Book : Introduction to Solid State Physics, C. Kittel, 1983*
5. "**Advanced Solid State Physics**" *Course in two semesters, (Graduate) Text Book : Solid State Physics, Ashcroft&Mermin)*
6. "**Statistical Mechanics**" *Course in one semester, (Graduate, Undergraduate) Text Book : Fundamentals of Statistical and Thermal Physics, F. Reif, McGraw-Hill, 1985.*
7. "**Advanced Statistical Mechanics**" *Course in one semester, (Graduate) Text Book : Statistical Mechanics, R. K. Pathria, 2<sup>nd</sup> edition, 1996.*
8. "**Thermodynamics**" *Course in one semester, (Undergraduate) Text Book : Zemansky*
9. "**Optics**", *Course in one semester, (Undergraduate) Text Book, Introduction to modern optics, G. R. Fowles.*
10. "**Fundamentals of Physics**", *Course in three semesters, (Undergraduate), Text Book : Haliday*
11. "**Many-body quantum theory for condensed matter**", *Course in two semesters, (Graduate), Text Books : Bruus&Flensberg, Mahan, Doniach&Sondheimer, Nolting, Inkson*

## **PASSED COURSES**

1. **In Ph.D. LEVEL:** *Many Body systems {Doniach&Mahan&Feter}, Critical Phenomena {Goldenfeld}, Condensed Matter (1,2), Specific topics on transport {Datta&?}, Individual study on Coherent Potential Approximation {Gonis}.*
2. **In M.S. LEVEL:** *Advanced Quantum Mechanics {Sakurai(1,2)}, Advanced Solid State Physics {Ashcroft(1,2)}, Advanced Statistical Mechanics {Pathria}, Electrodynamics {Jackson}, Computational Physics, Mathematical Physics {Arfken}, Seminar On Integrated Optics.*

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**Hosein Cheraghchi**