

# ***CURRICULUM VITAE***



## ***+PERSONAL DATA***

**Surname:** Cheraghchi  
**First name:** Hosein  
**Place of birth (city-country):** Sarakhs - Iran  
**Date of birth (Day-Month-Year):** 11/8/1972  
**Nationality:** Iranian

## ***+ADDRESS***

**Assistant Professor, Physics Department, Damghan University, Damghan, Iran**

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[h.cheraghchi@gmail.com](mailto:h.cheraghchi@gmail.com)

Homepage: <http://profs.du.ac.ir/info/cheraghchi>

## ***+FIELD of STUDY:***

### **Condensed Matter Physics:**

- Non-Equilibrium Electronic Transport through Mesoscopic systems
- Transport through monolayer and bilayer graphene
- Anderson Localization and localization properties in disordered systems
- Quantum Pumping: Non-adiabatic charge and spin pumping

- Interested Area: Topological Insulator, Floquet Topological Insulator

## **EDUCATIONS**

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

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

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

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*Lecturer (1997-2001) in Physics Department of Damghan University as a program of Military Service*

## **SUPERVISORS**

- *Ph.D. : Prof . Keivan Esfarjani, Department of Mechanical Engineering, MIT, Cambridge, MA 02139; Ph. D. Thesis: Transport properties in disordered one-dimensional systems and interacting nano contacts, Physics Department, Sharif University of Technology, (Sep 2007).*
- *M.Sc. : Dr . Sayyed 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 "*

## **BOOK**

*Book title: Graphene Simulation (ISBN 978-953-308-60-2, Publisher: InTech)*

*Chapter title: Nonlinear Transport through Ultra Narrow Zigzag Graphene Nanoribbons*

*Author: Hosein Cheraghchi*

## **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", Physical. Review. B. 72. 174207 (2005). [cond-mat/0507274].*

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). [cond-mat/0609275]*
3. *H. Cheraghchi,"Scaling properties of one-dimensional off-diagonal disorder", **Journal of Statistical Mechanics: Theory and Experiment**, P1006, (2006).[cond-mat/0603294]*
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 ", **Physical Review. B.** 78. 085123 (2008). arXiv:0805.3980*
6. *H. Cheraghchi, H. Esmailzade, "Gate-Induced Switch of Even Zigzag Graphene Nanoribbons and its charging effects", **Nanotechnology**, 21, 205306, (2010).*
7. *H. Cheraghchi, " Nonlinear transport through ultra-narrow zigzag graphene nanoribbons: non-equilibrium charge and bond currents", **Physica. Scripta.** 84, 015702(2011).*
8. *H. Cheraghchi, A. A. Irani, S. M. Fazeli, R. Asgari, "Metallic phase of disordered graphene superlattices with long-range correlations", **Physical. Review. B.** 83, 235430 (2011).*
9. *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) .*
10. *H. Cheraghchi, F. Adinehvand, "Spin polarization and magnetoresistance through a ferromagnetic barrier in bilayer graphene", **Journal of Physics: Condensed matter**, 24, 045303 (2012).*
11. *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).*
12. *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).*

13. **H. Cheraghchi**, "Nonadiabatic pure spin pumping in zigzag graphene nanoribbons with proximity induced ferromagnetism", *Journal of Magnetism and Magnetic Materials*, 264, 264-269 (2015).
14. **H. Cheraghchi**, **H. Esmailzadeh**, **A. G. Moghaddam**, "Superconducting electron and hole lenses", Submitted 2015.

## **SCIENTIFIC ACTIVITIES & HONORS**

1. **Regular Associate member of the Abdus-Salam International Centre for Theoretical Physics (ICTP), 2014-2019, Trieste, Italy.**
2. Scientific Committee of "Annual meeting of low dimensional systems", Tabriz University, Tabriz, 25-26 May, 2015.
3. **Short- Term Visit in the Condensed Matter and Statistical Mechanics Section, ICTP, Trieste, Italy, 20 July- 15 Aug 2012.**
4. Scientific Committee of "First national conference on computational science", Damghan University, Damghan, 6-7 Sep, 2012.
5. Long- Term Visit in School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, 20 Oct 2010 -20 March 2011.
6. Assistant Professor of Damghan University of Basic Sciences, 2007-yet.
7. Young Collaborator in the Abdus-Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, Summer 2003 for 3 months.
8. Honor Lecturer of Damghan University of Basic Sciences in Year of 2000.
9. Honor Student of Physics Department of Shiraz University in B. S. Level, 1994.
10. Head of Physics Department of Damghan University of Basic Sciences during ,1998-2001.

11. Head of the Graduated Studies office in Damghan University, during 2010-2012.

#### **+ Invited Speaker**

1. **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 November 2015). (<http://psi.ir/farsi.asp?page=mbs94>).
2. **General 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 January 2015). (<http://www.psi.ir/farsi.asp?page=cmc12>)
3. **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> October 2014) (<http://physics.ipm.ac.ir/conferences/rpts/title.jsp>).
4. **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 th April 2014) (<http://physics.ipm.ir/conferences/qtg/index.jsp>).
5. **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 Septembre, 2010) (<http://physics.ipm.ac.ir/conferences/gtic/index.jsp>).
6. **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 December 2008).(<http://spin.cscm.ir/sces08/program.html> )

#### **+ CONFERENCES ( TALKS & POSTERS )**

1. **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.
2. **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).

3. *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).*
4. *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).*
5. *F. Pasha, H. Cheraghchi, "Quantum pumped current in graphene nanoribbons", 20th Annual IASBS Meeting on Condensed Matter Physics, Zanjan (28-30, May 2014). (Selected Paper).*
6. *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).*
7. *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).*
8. *M. A. Keshtan, H. Cheraghchi, ' Simulation of generation of current vortexes 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).*
9. *M. Nabavi, H. Cheraghchi, ' Generation of energy gap in the graphene antidot lattices', Annual Physics Conference of Iran, Urmia University, Urmia, (5-7 Sep 2011).*
10. *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).*
11. *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).*
12. *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).*
13. *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)*

14. V. Derakhshan, H. Cheraghchi, S. A. Ketabi, "Investigation of energy gap in bilayer graphene nanoribbon with the zigzag edges", The 10<sup>th</sup> conference on Condensed Matter, Shiraz University, Shiraz, Iran, (26-27 Jan 2011).
15. V. Derakhshan, H. Cheraghchi, S. A. Ketabi, "Transport gap and Electronic transport through bilayer graphene nanoribbon with the zigzag edges", The 10<sup>th</sup> conference on Condensed Matter, Shiraz University, Shiraz, Iran, (26-27 Jan 2011).
16. 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)
17. 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).
18. 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).
19. 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).
20. 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).
21. 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).
22. H. Cheraghchi, H. Esmailzade, "Nonlinear Electronic Transport through Zigzag Graphene Nanoribbons", Spring college on computational nanoscience, 17 - 28 May 2010, ICTP, Trieste, Italy.
23. 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 cross-fertilization", 23 August - 3 September 2010, ICTP, Trieste, Italy.
24. 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).

25. **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).**
26. **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).**
27. **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).**
28. **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).**
29. **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).**
30. **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).**
31. **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).**
32. **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)**
33. **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)**
34. **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.**
35. **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).**
36. **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](#)**
37. **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).*
38. **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).*
  39. **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**
  40. **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. cond-mat/0507274*
  41. **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).*
  42. **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).*
  43. **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).*
  44. **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).*
  45. **K. Esfarjani, H. Cheraghchi, A. Farajian, "Effect of Disorder on Carbon Nanotube"**, *Research Project in Sharif University of Technology, (16 Mar 2003).*
  46. **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).*

## **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 PhD student at Damghan University)
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 triangular 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.*

### Professional Service

Referee for *Physical Review Letter*

Referee for *Physical Review B*

Referee for *Journal of Physics: Condensed Matter*

### WORKSHOPS

1. *"School and Workshop on Strongly Correlated Electronic Systems - Novel Materials and Novel Theories". 10-21 Aug 2015, ICTP, Trieste, Italy.*
2. *Conference on Frontiers of Nanoscience, 24 August - 1 September 2015, ICTP, Trieste, Italy.*
3. *"Summer School on Quantum Many-Body Physics of Ultra-Cold Atoms and Molecules", 1-14 July 2012, ICTP, Trieste, Italy*
4. *"Workshop on Quantum Simulations with Ultracold Atoms", 16-20 July 2012, ICTP, Trieste, Italy.*
5. *"Advanced School of Recent Progress in Condensed Matter Physics and Strongly Correlated Systems", School of Physics, IPM, Tehran, 27-28 June 2012.*
6. *"SPRING COLLEGE ON COMPUTATIONAL NANOSCIENCE", 17 - 28 May 2010, ICTP, Trieste, Italy.*
7. *"ADVANCED WORKSHOP ON"ANDERSON LOCALIZATION, NONLINEARITY AND TURBULENCE: A CROSS-FERTILIZATION", 23 August - 3 September 2010, ICTP, Trieste, Italy.*
8. *"Advanced School of Recent Progress in Condensed Matter Physics and Strongly Correlated Systems", School of Physics, IPM, Tehran, 5-9 July 2008.*
9. *"Workshop on High Performance Computing (HPC08)", School of Physics, IPM, Tehran, February 16-21, 2008.*

10. "College on Physics of Nano-Devices", ICTP, Miramare, Trieste, Italy (10-21 July 2006).
11. "Conference on Strongly Interacting Systems at the Nanoscale", ICTP, Miramare, Trieste, Italy (8 - 12 Aug 2005).
12. "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).
13. "School on Quantum Phase Transitions and Non-Equilibrium Phenomena in Cold Atomic Gases", ICTP, Miramare, Trieste, Italy (11-22 July 2005).
14. "10<sup>th</sup> Conference on Hopping and Related Phenomena (HRP 10)", ICTP, Miramare, Trieste, Italy (1-4 Sep 2003).
15. ICTP-INFM Conference on "New Frontiers in Nano-Biotechnology: Monitoring Protein Function with Single-Protein Resolution", ICTP, Miramare, Trieste, Italy (15-19 July 2003).
16. "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).
17. Euroconference on "Ab initio Many-body Theory for Correlated Electron Systems", ICTP, Miramare, Trieste, Italy (25-29 Aug 2003).
18. "Special Course of Computation Methods in Nano Physics of Condensed Matter", Kashan, Iran, (22-23 May 2002)
19. "The ICTP's Regional Workshop on Computational Condensed Matter Physics", Isfahan University of Technology, Isfahan, Iran, (15 - 25 Apr 2002).
20. "Pre-workshop on Computational Condensed Matter Physics", Isfahan University of Technology, Isfahan, Iran (28- 31 Jan 2002).

## **TEACHING**

1. "Advanced Quantum Mechanics", Course in two semesters, Text Book: "Modern Quantum Mechanics", J. J. Sakurai
2. "Special Topics in Condensed Matter Physics", Course in one semester, Text Book: Electronic Transport in Mesoscopic Systems, S. Datta, Cambridge University Press, 1995.
3. "Quantum Mechanics" Course in two semesters, Text Book : Quantum Physics, S. Gasiorowicz, John Wiley&Sons, 1996
4. "Solid State Physics" Course in two semesters, Text Book : Introduction to Solid State Physics, C. Kittel, 1983

5. " **Advanced Solid State Physics** " Course in two semesters ,  
Text Book : *Solid State Physics, Ashcroft&Mermin)*
6. " **Statistical Mechanics** " Course in one semester, Text Book  
: *Fundamentals of Statistical and Thermal Physics, F. Reif,  
McGraw-Hill, 1985.*
7. " **Advanced Statistical Mechanics** " Course in one semester,  
Text Book : *Statistical Mechanics, R. K. Pathria , 2<sup>nd</sup> edition,  
1996.*
8. " **Thermodynamics** " Course in one semester ,Text Book :  
*Zemansky*
9. " **Optics** ", Course in one semester, Text Book, *Introduction to  
modern optics, G. R. Fowles.*
10. " **Fundamentals of Physics** ", Course in three semesters, Text  
Book : *Haliday*
11. " **Many Body Physics in Condensed Matter Physics** ", Course  
in two semesters, Text Books : *Bruus&Flensberg, Mahan,  
Doniach&Sondheimer, Nolting, Inkson*

## ✚ 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.*

Updated in : Oct 2015

Hosein Cheraghchi