**Professional education**

• 2003-2008 PhD in Theoretical Solid State Physics, Department of Physics, Faculty of Science, Razi University, Kermanshah, Iran. Thesis title: *Disordered Superconductors*.

• 2001-2003 M.Sc in Theoretical Physics, Department of Physics, Faculty of Science, Razi University, Kermanshah, Iran. Thesis title: *Massive Vector Field Quantization in De Sitter Space*.

• 1996-2000 B.Sc in Physics, Department of Physics, Faculty of Science, Razi University, Kermanshah, Iran.

**Honors and awards**

• Awarded a full scholarship by Iranian Ministry of Science and Technology to pursue PhD (2004).

• Distinguished Researcher of Faculty of Science, Razi University among 60 research staff (2011).

**Research interests**

• Electronic properties of low dimensional systems.

**Published papers**

1. S. Jalilvand, **H. Mousavi**, *Vibration spectra of DNA and RNA segments*, Eur. Biophys. J. 53 (2024) 95.
2. **H. Mousavi**, *Superconductivity of metallic graphene*, Solid State Commun. 377 (2024) 115393.
3. **H. Mousavi**, S. Jalilvand, S. Paikar, *A Green's Function-tight-binding-based approach for T-graphene Analysis*, Appl. Phys. A 129 (2023) 195.
4. **H. Mousavi**, M. Mirzaei, S. Jalilvand, *Mechanical response of double-stranded DNA to dynamic excitation*, J. Vib. Control 29 (2023) 214.
5. S. Jalilvand, **H. Mousavi**, M. Irani, *Metal-semiconductor transition in Ψ-graphene*, Mater. Today Commun. 33 (2022) 104833.
6. **H. Mousavi**, M. Mirzaei, S. Jalilvand, S.S Sani, *Vibrational properties of DNA in different models*, Mech. Adv. Mater. Struct. 29 (2022) 3950.
7. **H. Mousavi**, M. Asshabi, S. Jalilvand,J. Khodadadi, *Strain Effect on the Electronic Properties of Graphdiyne*, Thin Solid Films 761 (2022) 139514.
8. **H. Mousavi**, M. Bamdad, Samira Jalilvand, *Calculation of Electron Transport in Short Polyyne Nanochains*, ECS J. Solid State Sci. Techol. 11 (2022) 091003.
9. S. Jalilvand, R. Sepahvand, **H. Mousavi**, *Electronic behavior of randomly dislocated RNA and DNA nanowires: a multi-model approach*, Eur. Phys. J. Plus 137 (2022) 928.
10. **H. Mousavi**, M. Bamdad, *The transport properties of poly(G)-poly(C) DNA oligomers in the Harrison's model*, J. Mol. Graph. Model. 112 (2022) 108138.
11. **H. Mousavi**, M. Bamdad, *Electron transport of carbon atoms sequence in two-band model*, Eur. Phys. J. Plus 136 (2021) 529.
12. **H. Mousavi**, S. Jalilvand, J. Khodadadi, M. Yousefvand, *Tight-binding description of semiconductive conjugated polymers*, Comput. Theor. Chem. 1199 (2021) 113190.
13. **H Mousavi**, S Jalilvand, *Investigation of Heat Capacity and Magnetic Susceptibility of Carbon Nanodiscs and Nanowires in Tight-binding Approximation*, J. Res. Many. Sys. 11 (2021) 121.
14. M. Bamdad, **H. Mousavi**, *Harrison model of polyynic carbyne chains*, ECS J. Solid State Sci. Techol. 10 (2021) 031001.
15. S. Sohrabi Sani, **H. Mousavi**, S. Jalilvand, M. Asshabi, *Hydrogenation effects on the thermal and magnetic properties of mono- and bilayer graphene*, Carbon Lett. 31 (2021) 1089.
16. **H. Mousavi**, S. Jalilvand, S. Sohrabi Sani, J.A. Hartman, M. Grabowski, *Electronic properties of different configurations of double-strand DNA-like nanowires*, Solid State Commun. 319 (2020) 113974.
17. S. Sohrabi Sani**, H. Mousavi**, S. Jalilvand, M. Asshabi, *Electronic properties of graphyne and graphdiyne in tight-binding model*, ECS J. Solid State Sci. Techol. 9 (2020) 031003.
18. S. Jalilvand, **H. Mousavi**, *Multi-band tight-binding model of MoS2 monolayer*, J. Elec. Materi. 49 (2020) 3599.
19. I.V. Bondarev, **H. Mousavi**, V.M. Shalaev, *Transdimensional epsilon-near-zero modes in planar plasmonic nanostructures*, Phys. Rev. Res. 2 (2020) 013070.
20. **H. Mousavi**, S Mohammadi, S Jalilvand, *Electrical conductivity of armchair carbon and boron nitride nanotubes in tight-binding model*, Iran. J. Appl. Phys. 9 (2019) 83.
21. **H. Mousavi**, S. Jalilvand, *Electrical and thermal conductivities of few-layer armchair graphene nanoribbons*, Eur. Phys. J. B 92 (2019) 4.

1. **H. Mousavi**, S. Jalilvand, F. Mirzaei, *Magnetic and thermal characteristics of armchair graphene nanoribbons in the two-band Harrison model*, J. Magn. Magn. Mater. 469 (2019) 405.

1. I.V. Bondarev**, H. Mousavi**, V.M. Shalaev, *Optical response of finite-thickness ultrathin plasmonic films*, MRS Communications 8 (2018) 1.
2. **H. Mousavi**, M. Grabowski, *Graphene nanoribbon superconductor*, J. Low Temp. Phys. 193 (2018) 12.
3. **H. Mousavi**, M. Grabowski, *Nonlinear electron transport across short DNA segment between graphene leads*, Solid State Commun. 279 (2018) 30.
4. **H. Mousavi**, J. Khodadadi, M. Grabowski, *Semiconducting behavior of substitutionally doped bilayer graphene*, Physics B 534 (2017) 90.
5. **H. Mousavi**, S. Jalilvand, J. Moradi Kurdestany, M. Grabowski, *Electron doping effects on the electrical conductivity of zigzag carbon nanotubes and corresponding unzipped armchair graphene nanoribbons*, Physics E 94 (2017) 87.
6. **H. Mousavi**, J. Khodadadi, J. Moradi Kurdestany, M. Grabowski, *Electronic thermal conductivity of armchair graphene nanoribbons and zigzag carbon nanotubes*, Physica E 85 (2017) 248.
7. **H. Mousavi**, J. Khodadadi, J. Moradi Kurdestany, Z. Yarmohammadi, *Electrical and thermal conductivities of the graphene, boron nitride and silicon boron honeycomb monolayers*, Phys. Lett. A 380 (2016) 3823.
8. **H. Mousavi**, S. Jalilvand, J. Moradi Kurdestany, *Pauli magnetic susceptibility of bilayer graphene and hexagonal boron-nitride*, Physica B 502 (2016) 132.
9. **H. Mousavi**, J. Khodadadi, *Electronic heat capacity and thermal conductivity of armchair graphene nanoribbons*, Appl. Phys. A 122 (2016) 14.
10. **H. Mousavi**, J. Khodadadi, *Graphene to graphane: two-band approach*, Superlattice Microst. 88 (2015) 434.
11. **H. Mousavi**, J. Khodadadi, M. Grabowski, *Electronic properties of long DNA nanowires in dry and wet conditions*, Solid State Commun., 222 (2015) 42.
12. **H. Mousavi**, J. Khodadadi, *Tight-binding investigation of thermal conductivity of graphene and few-layer graphene systems*, Int. J. Thermophys. 36 (2015) 2638.
13. **H. Mousavi**, M. Bagheri, J. Khodadadi, *Magnetic susceptibility and heat capacity of graphene in two-band Harrison model*, Physica E 74 (2015) 135.
14. **H. Mousavi**, M. Bagheri, *Controlling the band-gap of boron-nitride nanotubes with carbon doping*, J. Elec. Materi. 44 (2015) 2693.
15. **H. Mousavi**, M. Bagheri, *Electronic properties of impurity-infected few-layer graphene nanoribbons*, Physica B 458 (2015) 107.
16. **H. Mousavi**, *Heat capacity of hexagonal boron nitride sheet in Holstein model*, Semiconductors 48 (2014) 617.
17. **H. Mousavi**, S. Behroozi, *The Hall conductivity of graphene*, Semiconductors 48 (2014) 636.
18. **H. Mousavi**, J. Khodadadi, *Flake electrical conductivity of few-layer graphene*, Scientific World Journal 2014 (2014) 1.
19. **H. Mousavi**, *Sublattice superconductivity in boron nitride nanotube*, J. Supercond. Nov. Magn. 26 (2013) 2905.
20. M. Bagheri, **H. Mousavi**, J. Moradi Kurdestany, *Plasmons in spatially separated rolled-up electron-hole double-layer systems*, J. Appl. Phys.144 (2013) 034303.
21. **H. Mousavi**, J. Khodadadi, *Electronic heat capacity and conductivity of gapped graphene*, Physica E 50 (2013) 11.
22. **H. Mousavi**, *Electronic properties of doped gapped graphene*, Physica B 414 (2013) 78.
23. M. Bagheri, **H. Mousavi**, *Heat capacity of defective semiconducting carbon nanotubes*, Int. J. Therm. Phys. 34 (2013) 160.
24. **H. Mousavi**, R. Moradian, *Metallic and semimetallic properties of doped graphene and boron nitride planes*, Solid State Commun. 153 (2013) 17.
25. **H. Mousavi**, J. Moradi Kurdestany, M. Bagheri, *Carbon dioxide detection by boron nitride nanotubes*, Appl. Phys. A 108 (2012) 283.
26. **H. Mousavi**, M. Bagheri, *Effects of Holstein phonons on the electrical conductivity of carbon nanotubes*, Physica E 44 (2012) 1722.
27. **H. Mousavi**, M. Bagheri, *Electronic specific heat of carbon nanotubes*, Physica Scripta 85 (2012) 065602.
28. **H. Mousavi**, *Optical conductivity of carbon nanotubes*, Optics Commun. 285 (2012) 3137.
29. **H. Mousavi**, *Optical conductivity of graphene sheet including electron-phonon interaction*, Commun. Theor. Phys. 57 (2012) 482.
30. **H. Mousavi**, *Gas adsorption effects on the electrical conductivity of semiconducting carbon nanotubes*, Physica E 44 (2011) 454.
31. **H. Mousavi**, *Graphene as gas sensors*, Commun. Theor. Phys. 56 (2011) 373.
32. **H. Mousavi**, R. Moradian, *Nitrogen and boron doping effects on the electrical conductivity of graphene and nanotube*, Solid State Sci. 13 (2011) 1459.
33. **H. Mousavi**, *Graphene susceptibility in Holstein model*, J. Magn. Magn. Mater. 323 (2011) 1537.
34. **H. Mousavi**, *Boron doping effects on graphene susceptibility*, Physica E 43 (2011) 971.
35. **H. Mousavi**, *Effects of adsorbed gas on the electrical conductivity of metallic carbon nanotubes*, Solid State Common. 150 (2010) 775.
36. **H. Mousavi**, *Doped graphene as a superconductor*, Phys. Lett. A 374 (2010) 2953.
37. **H. Mousavi**, *The impact of gas molecule adsorption on the orbital magnetic susceptibility of graphene*, J. Magn. Magn. Mater. 322 (2010) 2533.
38. **H. Mousavi**, *On superconductivity state in pure graphene*, Commun. Theor. Phys. 54 (2010) 753.
39. **H. Mousavi**, H. Rezania, *Electron-phonon interaction in carbon nanotubes*, Mod. Phys. Lett. B 24 (2010) 2947.
40. R. Moradian, **H. Mousavi**, *Investigation of non-magnetic impurity doping effect on the MgB2 superconductor critical temperature*, J. Phys.: Condens. Matter 20 (2008) 095212.
41. R. Moradian, **H. Mousavi**, *The validity of Anderson's theorem for binary alloy s-wave superconductors in the Bardeen–Cooper–Schrieffer regime*, Supercond. Sci. Technol. 19 (2006) 449.

**Scientific cooperation:**

1. Department of Math & Physics, North Carolina Central University, NC, USA (January 2018- September 2019).
2. Department of Physics, University of Colorado, CO, USA (Febraury 2017- January 2018).
3. Department of Physics, Regensburg University, Regensburg, Germany (December 2011- March 2012).
4. Department of Physics, Brock University, ON, Canada (September 2005-Febraury 2006).

**Conference attendee:**

1. Condensed Matter Conference, Zanjan, Iran, May 2005.
2. Physics Conference, IPM, Tehran, Iran, May 2007.
3. 6th International Workshop on Nanomagnetism and Superconductivity, Coma Roga, Spain, July 2010.
4. 4th International conference on nanostructures, Kish, Iran, March 2012.
5. APS March Meeting 2019.

**Manuscript reviewer for:**

1. Solid State Communications
2. Journal of Low Temperature Physics
3. Superlattices and Microstructures
4. Physica B
5. Physica E
6. Canadian Journal of Physics
7. Journal of Inorganic and Organometallic Polymers and Materials
8. Advanced Engineering Materials
9. Mechanics of Advanced Materials and Structures
10. Journal of Magnetism and Magnetic Materials
11. Scientific Reports
12. BioTechniques
13. Frontiers
14. Journal of Polymer Research

**Supervisor of MSc. thesis:**

1. Effects of gas adsorption on the electrical conductivity of carbon nanotubes.
2. Magnetic field effects on the electronic properties of graphene nanoribbons.
3. Electrical conductivity of few-layer graphene and hexagonal boron nitride sheets.
4. Electronics properties of few-layer graphene nanoribbons.
5. Thermal conductivity of graphene plane, graphene nanoribbons and nanotubes.
6. Susceptibility and heat capacity of graphene nanoribbons in Harrison Model.
7. Investigation of thermal conductivity of bilayer graphene, boron nitride and beryllium oxide by Kubo formula.
8. Investigation of states density and heat capacity of armchair nanoribbons by Green's function approach.
9. Quantum transport in finite DNA strands with metallic armchair graphene nanoribbon leads.
10. Investigation of electronic properties of polymers in tight-binding model.
11. Investigating of electronic properties of two-dimensional hexagonal lattices black phosphorus and blue phosphorus and comparing them with graphene in tight-binding model.
12. Electronic properties of Ψ-graphene.
13. T-graphene nanotubes and nanoribbons.

**Supervisor of PhD thesis:**

1. Electronic properties of graphene and low-dimensional carbon materials
2. Electronic properties of graphene and organic nanostructures
3. Electron transport in low-dimensional systems

**Teaching experience:**

***Undergraduate level***

1. Mathematical Physics 1
2. Mathematical Physics 2
3. Mathematical Physics 3
4. Modern Physics
5. Quantum Mechanics 1
6. Quantum Mechanics 2
7. Solid State Physics 1
8. Solid State Physics 2
9. Statistical Mechanics
10. Semiconductors
11. Superconductivity
12. Vibration and waves
13. Basics Physics 1
14. Basics Physics 2
15. Basics Physics 3

***Graduate level***

1. [Computational Physics](http://www.google.com/url?sa=t&source=web&cd=5&ved=0CDcQFjAE&url=http%3A%2F%2Fen.wikipedia.org%2Fwiki%2FJournal_of_Computational_Physics&ei=nl8PTZOeLIGu8gPAt6GIBw&usg=AFQjCNFBn4GOMzy8wPn_3x2qXQm6wcBujQ)
2. Special Topics in Many-body Physics
3. Many-body Physics
4. Advanced Statistical Mechanics
5. Advanced Quantum Mechanics 1
6. Advanced Quantum Mechanics 2
7. Quantum Calculations for Nanostructures

**Conference organization:**

1. Executive director of 4th Nanotechnology Conference of Students, Kermanshah, Iran, September 2008.
2. Committee executive member of 36th Annual Physics Conference of Iran, Kermanshah, Iran, August 2020.

**IT skills:**

1. [Operating system: Linux, Windows.](http://www.google.com/url?sa=t&source=web&cd=5&ved=0CDcQFjAE&url=http%3A%2F%2Fen.wikipedia.org%2Fwiki%2FJournal_of_Computational_Physics&ei=nl8PTZOeLIGu8gPAt6GIBw&usg=AFQjCNFBn4GOMzy8wPn_3x2qXQm6wcBujQ)
2. Scientific program: Mathematica, Gnuplot, Xfig.
3. Scientific programming: FORTRAN 77 (90).
4. Editorial software: Latex, Office.

**Language skills:**

1. Persian (native)
2. English (scientific language)