

Hamed Rezaia

Current Position: Professor of Physics at Razi University in Iran

Personal information:

Date & place of birth: August 8, 1980, Kermanshah, Iran.

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Education:

Ph.D. Theoretical Condensed Matter Physics, January 2004- May 2009, Sharif University of Technology, Tehran, Iran. www.sharif.edu

M. Sc. In Physics Foundation, September 2002-December 2003, Sharif University of Technology, Tehran, Iran. www.sharif.edu

B. Sc. in Applied Physics, September 1998- August 2002, Razi University, Kermanshah, Iran.

Visiting Program:

1) Max Planck Institute for chemical physics of solids, Dresden, Germany, May 2008-July 2008

2) Wuppertal University, Wuppertal, Germany, December 2016-February 2017

3) Wuppertal University, Wuppertal, Germany, Jun 2018-Jul 2018

4) Martin Luther University, Halle, Germany, March 2020-September 2020

Fields of interest:

1) The study of Strongly correlated electronic system in the context of spin model Hamiltonians

2) The study of optical, transport, electronic properties of nanostructure systems using quantum many particle methods

3) The study of transport properties of low dimensional spin model Hamiltonians using quantum many particle approaches.

Publication:

- ١- Green's function approach to quantum criticality in the anisotropic Kondo necklace model, H. Rezaia, A. Langari, P. Thalmeier, Phys. Rev. B **77**, 094438 (2008)
- ٢- Green's function approach to the thermodynamic properties of the anisotropic Kondo necklace, H. Rezaia, A. Langari, P. Thalmeier, Phys. Rev. B **79**, 094401 (2009)
- ٣- Effect of anisotropy on the field induced quantum critical properties of the three dimensional $S=1/2$ Heisenberg model, H. Rezaia and A. Langari, Phys. Rev. B, **82**, 174407 (2010)
- ٤- Electron phonon interaction in carbon nanotubes, H. Mousavi, H. Rezaia, Mod Phys Lett B, **24**, 1 (2010)
- ٥- Green's function approach to the low temperature properties of Cs_2CuCl_4 , H. Rezaia, A. Langari, European Physical Journal B **84**, 37 (2011)
- ٦- Optical absorption of zigzag carbon nanotubes at finite temperature, H. Rezaia, Physica E **44**, 760 (2012)
- ٧- Effect of electron phonon interaction on the optical conductivity of zigzag carbon nanotubes. H. Rezaia, F. Taherkhani, Applied Physics A, **109**, 343 (2012) .
- ٨- Electrical conductivity of zigzag carbon nanotubes including Holstein polarons. , European Physical Journal B, H. Rezaia **85**, 338 (2011)
- ٩- Polaron effects on the thermal conductivity of zigzag carbon nanotubes, H. Rezaia, F. Taherkhani, Solid State.Comunication **152**,1711 (2012) .
- ١٠- Study of third harmonic generation in zigzag carbon nanotubes using Green's function approach, H. Rezaia, N. Daneshfar Applied Physics A **109**, 503 (2012) .
- ١١- Temperature and size dependency of thermal conductivity of aliminium nano cluster, F. Taherkhani, H. Rezaia, J Nanopart Res, **14**, 1222(2012)
- ١٢- Field induced quantum phase transition in the anisotropic spin ladder, H. Rezaia, S. Jesri, Journal of magnetism and magnetic materials, **328**, 96 (2013)
- ١٣- The role of electron-phonon interaction on the electronic property of metallic zigzag

- and armchair carbon nano tubes, H. Rezaia, M. Abtin, Physica E, **48**, 66 (2013)
- ١٤- The effect of holstein phonons on the electrical conductivity of doped monolayer Graphene, H. Rezaia, Physica E 54, 202 (2013)
- ١٥- Specific heat of doped armchair and zigzag carbon nanotubes, H. Rezaia, Physica E **56**, 326 (2014)
- ١٦- The effect of local electronic interaction on the optical properties of boron-nitride nanotubes, H. Rezaia, Physica E **61**, 48 (2014)
- ١٧- Effects of anisotropy on the dynamical and static spin conductivity of an anisotropic spin $\frac{1}{2}$ two leg ladder, H. Rezaia, Prog. Theor. Exp. Phys. 2014, **033I01**
- ١٨- Optical properties of gapped graphene structure driven by electron-electron interaction , H. Rezaia, Physica E **56**, 32.(2014)
- ١٩- Intracellular viral infection kinetics using a stochastic approach F. Taherkhani, F. Taherkhani, H.Rezaia and H. Akbarzadeh, Progress in Reaction Kinetics and Mechanism, 2013, **38**(4), 359 – 376
- ٢٠- Thermal conductivity of anisotropic spin-1/2 **two**-leg ladder: Green’s function approach, H. Rezaia, A. Langari, P. H. M. van Loosdrecht and X. Zotos, European Physical Journal B **8**, 173 (2014)
- ٢١- Electrical conductivity and density of state of boron nitride nanotubes due to electronic correlation, H. Rezaia, International Journal of Modern Physics B **28**, **1450180** (2014)
- ٢٢- Chemical ordering effect on melting temperature, surface energy of copper- gold bimetallic nanocluster, F. Taherkhani, H. Akbarzadeh, H. Rezaia, Journal of alloys and compounds **617**, 740 (2014)
- ٢٣- Energy loss spectra of doped graphene and armchair carbon nanotubes at finite temperature, H. Rezaia and F. Taherkhani Scientia Iranica **21**, 1179(2014)
- ٢٤- Thermodynamic Properties of anisotropic spin ladder in a longitudinal magnetic field, H. Rezaia, Journal of magnetism and magnetic materials **388**, 68 (2015)
- ٢٥- Electronic properties of Boron Nitride sheet and nanotube in the presence of

- Transverse field, H. Rezaia, A. Aghaiimanesh Physica E **73** 100 (2015)
- ۲۶- Transmissivity and reflectivity of light between two media separated by gapped graphene like structures, , S. Marvi, H. Rezaia, H. Salvedari, Z. Aghaiimanesh Optik-International Journal of Light and Electron Optics **126**, 2171 (2015)
- ۲۷- The effects of boron doping on the optical absorption of carbon nanotubes, H. Rezaia Optik-International Journal of Light and Electron Optics, **126**, 1918 (2015)
- ۲۸- Thermal conductivity of disordered AA-stacked bilayer graphene in the presence of biase voltage H. Rezaia, A. Abdi, European Physical Journal B **88**, 1(2015)
- ۲۹- Electronic correlation effects on the optical properties of SiC, BeO and Boron Nitride nanotubes and Monolayers, H. Rezaia, A. Aghaiimanesh Commun. Theor. Phys **64**, 583 (2015)
- ۳۰- The effect of boron doping on the thermal conductivity of zigzag carbon nanotubes, H. Rezaia International Journal of Modern Physics B, 29, 1550025 (2015)
- ۳۱- Electronic properties of disordered zigzag carbon nanotubes, H. Rezaia, International Journal of Modern Physics B **29**, 1550020 (2015)
- ۳۲- Optical properties of gapped graphene structure in the presence of electron-phonon interaction: A full band approach H Rezaia, P Zare Superlattices and Microstructures 100, 474-482 (2016)
- 43- The effects of impurity doping on the optical properties of biased bilayer graphene, H Rezaia, M Yarmohammadi Optical Materials 57, 8-13 (2016)
- 44- RKKY interaction in spin polarized armchair graphene nanoribbon H Rezaia, F Azizi Journal of Magnetism and Magnetic Materials 417, 272-278 (2016)
- ۳۳- Dynamical thermal conductivity of bilayer graphene in the presence of bias voltage, H. Rezaia, M. Yarmohammadi, Physica E **75**, 125 (2016)
- ۳۴- Dynamical thermoelectric properties of doped AA-stacked bilayer graphene, H. Rezaia, M. Yarmohammadi, Superlattice and Microstructures **89**, 15 (2016)
- ۳۵- Field dependent spin transport of anisotropic Heisenberg chain, H. Rezaia, Journal of Magnetism and Magnetic Materials 403, 146 (2016)

- ۳۶-Optical conductivity of biased bilayer graphene beyond Dirac Approximation, H. Rezaia, M. Yarmohammadi, Indian Journal Physics 90 (7), 811-817 (2016)
- ۳۷-Impurity effects on electrical conductivity of doped bilayergraphene in the presence of bias voltage, E. Lotfi, H. Rezaia, B. Arghavaninia, M. Yarmohammadi, Chinese Physics B 25, 076102 (2016)
- ۳۸-Charge and paramagnetic spin susceptibilities of doped gapped graphene like structures, H. Rezaia and Y. Naseri, Journal of Electronic Materials, 45, 2870 (2016)
- ۳۹-Controlling dynamical thermal transport of biased bilayer graphene by impurity atoms, H. Rezaia, M. Yarmohammadi, AIP Advances 6, 075121 (2016)
- ۴۰- [Charge susceptibilities of armchair graphene nanoribbon in the presence of magnetic field](#), H Rezaia, F Azizi, Chinese Physics B 25 , 097303 (2016)
- 41- [The effects of impurity doping on the optical properties of biased bilayer graphene](#), H Rezaia, M Yarmohammadi, Optical Materials 57, 8 (2016)
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64-Longitudinal magnetization and specific heat of the anisotropic Heisenberg antiferromagnet on honeycomb lattice, F. Azizi and H. Rezaia Physica E (2019)

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- 68-[Thermodynamic properties of Heisenberg model for magnetic ordered graphene sheet](#), F Azizi, H Rezania, Chinese Journal of Physics 59, 410-417(2020)
- 69-[Effects of electron-phonon coupling and magnetic field on electrical conductivity of monolayer graphene](#), P Zare, H Rezania, Journal of Magnetism and Magnetic Materials 481, 183-188(2019)
- 70-[Transverse spin susceptibilities of doped armchair graphene nanoribbon due to electron-phonon interaction](#), H Rezania, F Azizi, Solid State Communications 298, 113638(2019)
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- 72-[Electrical conductivity of undoped bilayer Graphene: Beyond nearest neighbor approximation](#), A Abbasi, H Rezania, Chemical Physics 525, 110384(2019)
- 73-[Effect of magnetic field on specific heat and magnetic susceptibility of biased bilayer graphene: A full band approach](#), S Karimi, H Rezania, Chemical Physics 525, 110417(2019)
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- 78-[Spin transport properties of anisotropic Heisenberg antiferromagnet on honeycomb lattice in the presence of magnetic field](#), F Azizi, H Rezania The European Physical Journal B 93 (2), 1-11(2020)
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Chinese Journal of Physics 65, 593-603(2020)
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H Rezaia, F Azizi, ECS Journal of Solid State Science and Technology 9 (5), 051004(2020)
- 83-[Thermoelectric Properties of Graphene Like Nanotube Structure Due to Next-to-nearest Neighbor Hopping Amplitude](#), H Ghanbaripour, H Rezaia, B Astinchap
ECS Journal of Solid State Science and Technology 9 (5), 051009(2020)
- 84-[Charge structure factors of doped armchair nanotubes in the presence of electron-phonon interaction](#), H Rezaia, F Azizi, Chinese Physics B 29 (9), 096501(2020)
- 85-[Indirect RKKY interaction in doped armchair nanotube due to electron phonon interaction effects](#), H Rezaia, F Azizi, Chinese Journal of Physics 66, 488-496(2020)
- 86-[Optical properties of biased bilayer graphene due to gap parameter effects](#)
B Maleki, H Rezaia, Chinese Journal of Physics 68, 321-329(2020)
- 87-[Spin susceptibilities of doped bilayer graphene in the presence of magnetic ordering](#), Y Soori, H Rezaia, Solid State Communications 323, 114074 (2021)
- 88-[Plasmonic excitations and charge structure factor in armchair boron nitride nanotubes](#), F Azizi, H Rezaia, Physica E: Low-dimensional Systems and Nanostructures 126, 114385(2021)
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Y Soori, H Rezaia, Physica E: Low-dimensional Systems and Nanostructures 127, 114458(2021)
- 90-[Effects of spin-orbit coupling and magnetic field on electronic properties of Germanene structure](#), F Azizi, H Rezaia, Synthetic Metals 273, 116707(2021)
- 91-[RKKY interaction in spin polarized doped zigzag carbon nanotube in Holstein model](#), F Azizi, H Rezaia, Physica E: Low-dimensional Systems and Nanostructures 128, 114612(2021)

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F Azizi, H Rezania, Physica E: Low-dimensional Systems and Nanostructures, 114985 (2021)

93-[Thermal Conductivity of Localized Electrons on Magnetic Ordered Monolayer Graphene](#)

F Azizi, H Rezania, ECS Journal of Solid State Science and Technology 10 (8), 081012 (2021)

94-[Thermodynamic properties of electronic Lieb lattice with spin–orbit coupling: the magnetic field effects](#)

H Rezania, E Sadeghi, Applied Physics A 127 (8), 1 (2021)

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F Azizi, H Rezania, Journal of Superconductivity and Novel Magnetism, 1-7(2021)

97-[Spin structure factors of doped monolayer Germanene in the presence of spin-orbit coupling](#)

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98-Study of magnetization and specific heat of Heisenberg model on Lieb lattice, F. Azizi and H. Rezania, Physica E 142, 115269 (2022)

99-Optical absorption of Phosphorene structure, H. Rezania, M. Abdi and B. Astinchap, European physical journal Plus 137, 1 (2022)

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104- [Strain and magnetic field effects on the electronic and transport properties of \$\gamma\$ -graphyne](#)

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RSC advances 13 (12), 7988-7999

105- [The effects of spin-orbit coupling on optical properties of monolayer due to mechanical strains](#)

H Rezaia, M Abdi, B Astinchap, E Nourian
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106- [Biaxial strain and magnetic field effects on electronic and optical properties of \$\beta\$ -graphyne structure](#)

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107- [The Far-Field Optical Properties and Fluorescence Enhancement of Multilayer Plasmonic Nanoshells Containing a Luminescent Layer](#)

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108- [The effects of spin-orbit coupling on optical properties of electronic Lieb lattice in the presence of magnetic field](#)

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109- [Thermodynamics Properties of \(6, 6, 12\)-Graphyne Structure Due to Biaxial Strain and Magnetic Field Effects](#)

H Rezaia, E Nourian, M Abdi, B Astinchap
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110- [Effects of spin-orbit coupling on transmission and absorption of electromagnetic waves in strained armchair phosphorene nanoribbons](#)

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Conferences Contributions:

- ١- Hamed Rezaia, and Abdollah Langari in the conference paper of the 9th Iranian Conference of Physics.2006(**Talk**).
- ٢- Hamed Rezaia, 17th iranian annual condensed matter conference in Zanjan (2010)
- ٣- Hamed Rezaia, 18th iranian annual condensed matter conference in Zanjan (2010)(**Talk**)
- ٤- International Workshop on thermal conductivity of nanoscale systems, IPM, Tehran , Iran. (2015) (**Contributed Talk**)

- H. Rezaia, National Conference on graphene and nanostructures, Iranian Physical Society, Tehran Iran (2015) (**Talk**)
- National conference of Physics, Isfahan Univ. Tech, Iran, Isfahan (2015)(**Scientific Committee**)

References:

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Prof. Andreas Klumper, Wuppertal University, Germany

Prof. Jamal Berakdar, Martin Luther University, Germany

Projects:

PhD

The study of quantum phase transition and thermodynamic properties of Kondo necklace model using Bose Einstein Condensation approach. under the supervision of Prof. [A.](#) Langari at Sharif University of Technology. www.sharif.edu

Computer skills:

Operating system: Windows, acquaintance with Linux.
Software: Gaussian, MSWord and MSExcel, Mathematica, acquaintance with DL-poly, Quantum Espresso, Firefly
Programming language: Fortran

Languages: *Persian:* Native, Fluent.
 German: Good

English: good