Curriculum Vita

Hamidreza Moshfegh
Professor

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Date of Birth: 31-Jan-1967, Tehran, Iran
Material status: Married – One childe

Educations

PhD : Physics 1993-1997 Amir-Kabir Technology University,
Tehran-Iran
M.Sc in Physics 1991-1993 University of Tehran, Tehran-Iran
BSc. in physics 1986-1990 University of Kerman , Kerman-Iran

Professional experience

2025- Visiting Professor at CBPF, Rio de Janeiro, Brazil
2024-Invited member of Academy of science of Iran
2024- Committee member of experts in Ministry of Higher Education
2023-present: President of The Physics Society of Iran (PSI)
2023-2024: Visiting professor at PUC and CBPF, Rio de Janeiro, Brazil
2020-2023: Vice president of The Physics Society of Iran (PSI)
2020-2021: Dean of college of Science, University of Tehran
2017-2024 Committee member of INSF- Physics and Mathematics division
2017-2021 Member of committee of experts in University of Tehran
2014-2017: Dean of research section,   Collage of Science in research, University of Tehran,
2014-2017: Vice president of The Physics Society of Iran (PSI)
2016- Present Member of Editorial board of Journal of Research on Many-Body Systems
2015- Visiting professor at Coimbra University, Coimbra, Portugal
2012-2021 Member of Educational planning committee (Physics Section) of Ministry of higher education of Iran
2011-2013: Member of central board of The Physics Society of Iran (PSI)
2013- Member of Editorial board of Journal of many body system and Iranian Journal of Physical chemistry
2013: Visiting professor at Nicolas Copernicus Astronomical Center, Warsaw, Poland
2012: Visiting professor at INFN , Catania, Italy
2011: Visiting professor at INFN , Catania, Italy
2010-Present: Professor, Department of Physics, University of Tehran.
2008-2011: Head of Department of Physics, University of Tehran
2005-2008: Deputy of research section, Department of Physics, University of Tehran
1999-2000: Deputy of Educational planning, Department of Physics, University of Tehran
2005-2010: Associate Professor, Department of Physics, University of Tehran

2000-2004: Non-resident researcher: Institute of Theoretical physics and Mathematics (IPM)
1998-2000: Resident researcher: Institute of Theoretical physics and Mathematics (IPM)
1998-2005: Assistant Professor, University of Tehran, Department of Physics
1991-1997: Lecturer, Department of Physics, University of Tehran

Teaching and advising activity.

-Member of Advisory board (Scientific and executive) of several National and some International Scientific Conferences

Thesis advisor

Undergraduate:
Over than 20 student (complete)

Graduate:

30 MSc. student (completed)
2 MSc. student (current)
11   PhD. Student (completed)
3 PhD. Student (current)

Courses

Undergraduate:

Mathematics:
Calculus 1-Calculus 2, Differential equations,
Mathematical Physics I, Mathematical Physics II, Mathematical Physics III,
Green functions and application
Group Theory,
Numerical Methods, FORTRAN Programing

Physics:

Elementary Physics:
Mechanics, Electricity and Magnetism, Heat, Waves
(Teaching classes with more than 200 students)

Modern Physics
Thermodynamics
Analytic Mechanics
Mathematical Physics
Electromagnetism
Quantum mechanics
Group theory

Relativity
Space-time physics
Optics
Nuclear Physics
Statistical mechanics
Structure and evolution of stars
Computer programming

Graduate:

Advanced Quantum Mechanics
Electrodynamics
Advanced Statistical Mechanics
Field Theory
QED
High energy Physics
Advanced Nuclear Physics
Special topics in astrophysics
Compact stars

Publications

Journals

59-Hyperons in Neutron Stars across the observed mass range: Insights from realistic -N and - interactions within a Microscopic Framework, AMA Looee, M Shahrbaf, **HR Moshfegh** The Astrophysical Journal , (2026), DOI: 10.3847/1538-4357/ae18d0

58-Impact of QCD sum rules coupling constants on neutron stars structure FM Jangal, **HR Moshfegh**, K Azizi, The European Physical Journal C 85 (6), 691

57-Semileptonic decay of the triply heavy Ω_{ccb} to the observed Ξ^{++}_{cc} state, Z Rajabi Najjar, K Azizi, **H. R. Moshfegh**, Physical Review D, 111, 1, 014016 (2025)

56-R-mode instability of neutron stars: LOCV approach, M Shahbazi, M Bigdeli, **H. R. Moshfegh**, M Zamani, International Journal of Modern Physics E (2024) 2450049.

55- Investigation of the semileptonic decay Ξ^{++}_{cc} to $\Xi^{+}_{c}l/nu_l$ within QCD sum rules, M. Shekari Tousi, K. Azizi, **H. R. Moshfegh,** Physical Review D , 110(2024)114001,

54-Semileptonic Omega_b to Omega_c transition in full QCD, Z. Neishabouri, K. Azizi, **H. R. Moshfegh,** Physical Review D 110(2024)014010.

53- Properties of the ground and excited states of triply heavy spin-1/2 baryons, ZR Najjar, K Azizi, **H. R. Moshfegh,** European Journal of Physics C, 84(2024)612

52-Correlating isothermal compressibility to nucleon fluctuations in the inner crust of neutron stars, R Shafieepour, **H.R.Moshfegh**, J Piekarewicz, Physical Review C 109 (2024) 025806

51- Hybrid stars within the framework of the Sigma-Omega-Rho model combined with the MIT and NJL models, R. Karimi, **H.R. Moshfegh**, Nuclear Physics A, 122684 (2023)

50- Strong Magnetic Field Effect on Radius of Neutron Stars, AM Ali Looei**, H.R. Moshfegh**, Journal of Research on Many-body Systems 12(2022) 31-47

49- Characterization of the inner edge of the neutron star crust, R Shafieepour, **H.R.Moshfegh**, J Piekarewicz, Physical Review C 105 (2022) 055809

48- Number spectra of nonequilibrium neutrinos from neutron stars: Impact of realistic nuclear interactions and free hyperons, AD Niri, **H.R. Moshfegh**, Physical Review C 105 (2022) 045809

47- Baryons' coupling constants in the Sigma–Omeg a–Rho model and the mass–radius relation of neutron stars in the presence of hyperons, R. Karimi, **H.R. Moshfegh**, Annals of Physics, 436(2022) 168665

46- Obituary for Shahriar Bayegan
MR Hadizadeh, M Radin, M Moeini Arani, **HR Moshfegh**, N Kalantar-Nayestanaki**,** *Few-Body Systems.* **62, 3** (2021)

45- The scattering length effect on properties of cold interacting Fermion systems in LOCV framework, E. Gholami Hatam, **H.R. Moshfegh,** *Int. J. Mod. Phys.* **E 29** (2020) 2050019

44-Straucture and Tidal deformability of a Hybrid star within the framework of the Field correlator method, S Khanmohamadi, **HR Moshfegh**, SA Tehrani, Physical Review D 101 (2020) 123001

43-LOCV calculation for nuclear and neutron matter with the Nijmegen potential, H Rashidi, S Zaryouni, **HR Moshfegh**, Nuclear Physics A 996, 121678 (2020)

42-First-order phase transition from hypernuclear matter to deconfined quark matter obeying new constraints from compact star observations
M Shahrbaf, D Blaschke, AG Grunfeld, **HR Moshfegh**, Physical Review C 101 (2020), 025807

41-Hybrid star within the framework of a lowest-order constraint variational method, S Khanmohamadi, **HR Moshfegh**, SA Tehrani, Physical Review D 101 (2020) 023004

40-Equation of state and correlation functions of hypernuclear matter within the lowest order constrained variational method, M Shahrbaf, **HR Moshfegh**, M Modarres, Physical Review C 100 (2020), 044314

39- Neutron and nuclear matter properties with chiral three-nucleon forces S.Goudarzi, **H.R.Moshfegh,** Nuclear Physics A 985(2019)1

38- Appearance of hyperons in neutron stars within LOCV method M. Shahrbaf, **H.R. Moshfegh**, Annals of Physics, 402(2019)66

37- Role of relativistic effects and three-body forces in nuclear matter properties, S. Heidari, S. Zaryouni**, H. R. Moshfegh**, and S. Goudarzi, Phys.Rev. C99, (2019) 024307

36- Role of nuclear correlations and kinematic effects on neutrino emission from the modified Urca processes, A. Dehghan, **H.R.Moshfegh**, P. Haensel, Phys. Rev. C98, (2018) 025803

35-The role of three-body forces in nuclear symmetry energy and symmetry free energy, S. Goudarzi , **H.R. Moshfegh** , P. Haensel, Nuclear Physics A 969(2018)206

34- The effective masses of nucleons in asymmetric nuclear matter in the LOCV framework. M. Mazidabadi Farahani, **„ H.R. Moshfegh**, S.Goudarzi, Journal of Physics: 932 (2017)012041

33 - Emissivity and mean-free path of neutrinos in neutron star matter , A. Khodaie, A. DehghanNiri**,, H.R. Moshfegh**, P. Haensel, Acta Physics Polonica B 48(2017) 661

32-Nuclear Correlations and neutrino emissivity from the Neutron branch of the Modified Urca process, A. Dehghan, **H.R.Moshfegh**, P. Haensel, Phys.Rev. C93, (2016) 045806

31-Proto-Neutron Star structure within an extended LOCV method at finite temperature**:** **H.R Moshfegh** and S. Goudarzi Phys. Rev. C 92(2015) 035804

30-Effect of Three body forces on Maximum mass of neutron stars in the LOCV formalism: **H.R Moshfegh** and S. Goudarzi Phys. Rev. C 91 (2015) 054320

29-Temperature dependence of Nuclear Symmetry energy **: H.R. Moshfegh** and S. Goudarzi Acta Physica Polonica 46 (2015) 419

28-Thermal Properties of nuclear matter in a variational framework with relativistic corrections
S. Zaryouni, M. Hassani and **H.R. Moshfegh** Phys. Rev. C 89, 014332 (2014)

27- Role of Saturation properties of hot nuclear matter in the proximity formalism, O.N. Ghodsi, H.R. Moshfegh and R. Gharaei, Phys. Rev. C 88,034601 (2013)

26- Strange Baryonic matter in the Thomas-Fermi Theory**, H.R.Moshfegh** and M. Ghazanfari Mojarrad, Eur. Phys. J. A 49(2013) 1

25- Correlations in Nuclear matter, M. Baldo **and H. R. Moshfegh**, Phys. Rev. C 86(2012) 024306

24 - Thermal Properties of Baryonic matter, **H.R. Moshfegh**, M. Ghazanfari, J. Phys. G. 38 (2011)085102

23 - A relativistic approach to the equation of state of asymmetric nuclear matter, S.Zaryouni and **H.R.Moshfegh**, , Eur.Phys.J. **A 45** (2010)69

22- LOCV calculation of nuclear matter with relativistic hamiltonian, **H.R.Moshfegh**, S.Zaryouni, Eur.Phys.J. **A 43** (2010)283

21 - LOCV calculations for Neutron star properties, **H.R.Moshfegh,** Acta Physica Polonica, **B 40**(2009) 661

20- The thermodynamics properties of normal liquid helium 3, M.Modarres, **H.R. Moshfegh ,** Physica **A388** (2009) 3297

19- The LOCV nuclear matter calculation and the magnetic susceptibility of neutron matter , M.Modarres, T. Pourmirjafari and **H.R. Moshfegh** Nucl. Phys. **A819**(2009)27

18- The one body momentum distribution of nuclear matter at finite temperature M.Modarres, A.Rajabi and **H.R.Moshfegh,** Nucl.Phys.A 808 (2008) 60

17 -State dependent calculation of Three-body cluster energy for nuclear matter and the validity of LOCV formalism, M.Modarres, A.Rajabi and **H.R.Moshfegh** , Phys.Rev. **C67** (2007)064311.

16-Thermal properties of asymmetrical nuclear matter with the new charge-dependent Reid potential, **H.R.Moshfegh** and M. Modarres, *Nucl. Phys*. **A 792** (2007) 201.

15-Equqtion of state of hot Nuclear and neutron matter: A statistical approach, **H.R.Moshfegh**, *Int. J. Mod. Phys.* **E 15** (2006) 1127.

14-Equqtion of state of the homogeneous electron fluid : A variational approach, **H.R.Moshfegh**, M.Modarres*, Physica.* **B 378** (2006) 1095.

13-Relativistic correction to the nuclear and neutron matter energy in LOCV frame work , S.Zaryouni and **H.R.Moshfegh** *Int. J.Mod.Phy*. **E 14** (2005) 297.

12-The properties of hot nuclear matter in LOCV formalism. **H.R.Moshfegh** and M.Modarres, *Nucl.Phys*.**A 749** (2005) 130.

11-Effect of zero and finite temperature short range correlations on the coulomb sum rule and response function. M.Modarres, H. Moeini and **H.R.Moshfegh,** *Int. J. Mod. Phys.Lett.* **A 20** (2005) 1903.

10-LOCV calculation for asymmetric Nuclear with the new Reid93 potential,

H.R.Moshfegh and M. Modarres, *Nucl. Phys*. **A 759** (2005) 79.

9-Nuclear matter energy with relativistic Hamiltonian in LOCV formalism, S.Zaryouni and **H.R.Moshfegh** *Nucl.Phys* **A 734** (2004) 108.

8-Lowest order constrained variational method applied to liquid He3 , M.Modarres **H.R.Moshfegh** and K.Fallahi ,*Euro. Phys.J*. **B 36** (2004) 485.

7-Lowest order constrained variational calculation for Nuclear and neutron matter with the new charge dependent Reid potential,
M.Modarres **,H.R.Moshfegh,** *Prog.theo.Phys*. **112** (2004) 21.

6-LOCV calculation for the uniform electron fluid at finite temperature, M.Modarres **H.R.Moshfegh** ,A.Sepahvand *Euro. Phys.J*. B **31**(2003)159.

5-Delta (1232) Isobar probability in frozen and hot Neutron, Nuclear and beta- stable matter,M.Modarres and **H.R. Moshfegh**, *Prog.theo.Phys*. **107**(2002) 139 .

4-Lowest order constrained variational and local density approximation approach to the hot alpha particle, M.Modarres, **H.R.Moshfegh**,, H.Mariji**,** *Can.J.Phys*. **80**(2002) 911-923.

3- Validity of LOCV method and incomppresibility for asymmetric nuclear matter. **H.R.Moshfegh** and M.Modarres. *Cond.Matter.Theo.* **13**(1998)264.

2-Lowest order constrained variational calculation for Beta-stable matter at finite temperature,M.Modarres and **H.R.Moshfegh,** *Phys-Rev C* **62**(2000)44308.

1-The Effect of three-body cluster energy on LOCV calculation for hot nuclear and neutron matter , **H.R.Moshfegh** and M.Modarres, *J.Phys*. *G* **24** (1998)821

Proceeding, conferences
1)The International Conference "**Nuclear Structure and related topics**" <u>Dubna</u> 1997 (full paper)

2)11th International Conference on **Recent Progress In many-Body Theories UMIST Manchester** 9-13 July 2001

3)8th International Conference on **NUCLEON-NUCLEON OLLISION,<u>MOSCOW RUSSIA</u>** 16-24 June 2003
5) 4th Conference on Nuclear and Particle Physics, Fayoum,Egypt 11-15 October 2003

6) 27th edition of Condensed Matter Theory Workshop , St.Louis, USA. 27 Sept.- 2 Oct. 2004
7) 28th International Workshop on Condensed Matter Theory , Toulouse, France. 15-20 Sept. 2003

9) XI Reginol Conference on Mathematical Physics Tehran,Iran.3-6May 2004
 10) Phase Transition In Strongly Interacting Matter Prague, Czech Rep. 23-29 August 2004.
    5) 5th Conference on Nuclear and Particle Physics, Cairo,Egypt 7-21 NOV. 2005
    6) Strongly correlated electron systems SCES'05, Wien , Austria, Aug. 2005
    7) Zakopane Conference on Nuclear Physics, Zakopane, Poland, September 2006
    8) International sympousium on Exotic matter EOCT07, Catania, Italy, June 2007
    9) Zakopane Conference on Nuclear Physics, Zakopane, Poland, September 2008
    10) Frontiers in Nuclear structure, astrophysics and Reactions, Rhodos, reece, August 2010
12) Zakopane Conference on Nuclear Physics, Zakopane, Poland, September 2010
13) 7th Conference on Nuclear and Particle Physics, Hagharad,Egypt 21-24 NOV. 2011
14) Zakopane Conference on Nuclear Physics, Zakopane, Poland, September 2014
15) Neutron Stars, after 50 years, Saint Petersburg , Russia, 2017
16) Invited Speaker: Physics of dense object, Caracas, Venezuela 2024

Iranian Annual Physics Conference
Every year from 1998-2020

Books

Elementary Physics (in Persian) (Nei Press Co. Tehran-Iran)

Translation of **an Introduction to Elementary Particle** by **D.Griffith** to Persian (Center of Universities Press Tehran-Iran)

Translation of Modern **Quantum Mechanics** by **J.J. Sakurai** to Persian (Univ. of Tehran Press Tehran-Iran)

Translation of **Quantum Mechanics, An Introduction** by **W. Greiner** to Persian (The Universities Books Press Tehran-Iran)
Translation of **Quantum Mechanics,** by **D.Griffith** to Persian (The Universities Books Press Tehran-Iran)