

**Rasoul Roknizadeh**  
**CURRICULEUM VITAE**



**1. Personal Information**

Surname: **Roknizadeh**  
Given name: **Rasoul**  
Date of Birth: August 20, 1960  
Professional Address: University of Isfahan  
Department of Physics, Hezar jerib-St., Isfahan, Iran  
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**2. Higher Studies and Degrees**

| Degree /Year | Discipline          | University                                 |
|--------------|---------------------|--------------------------------------------|
| Ph.D./1999   | Theoretical Physics | Technical University<br>Clausthal(Germany) |
| M.Sc./1990   | Physics             | University of Ferdowsi Mashhad<br>(Iran)   |
| B.Sc./1987   | Physics             | University of Isfahan (Iran)               |

Title of PhD Thesis: **Geometrisierung der Quantenmechanik durch Berezin-Quantisierung  
(Geometrization of Quantum Mechanics by Berezin Quantization)**

**3. Published Article**

58.M. Shirzad, R. Roknizadeh, A. Mahdifar  
*Exploring the feasibility of optomechanical systems for temperature estimation in interferometric setups*, Phys. Rev. A **109**, 053509 (2024)

57. M Momeni-Demneh, A Mahdifar, **R Roknizadeh**  
*Nonlinear optical effects on the atom-field interaction based on the nonlinear coherent states approach*, JOSA B **39** (5), 1353-1363 (2022).

56. M Momeni-Demneh, A Mahdifar, **R Roknizadeh**  
*Control of nonclassical properties of the two-mode Kerr nonlinear optical system based on the nonlinear coherent states approach*, Int. J. Optics and Photonics 16(1), 27-36 (2022).
55. A Motazedifard, A Dalafi, MH Naderi, **R Roknizadeh**  
*Strong Quadrature Squeezing and quantum amplification in cold Bose-Einstein condensate-Optomechanical cavity based on parapet*, Annals of Physics **405**, 202-219 (2019)
54. F Bemani, **R Roknizadeh**, A Motazedifard, MH Naderi, D Vitali  
*Quantum Correlations in Optomechanical Crystal*, Physical Review A **99** (6), 063814 (2019)
53. A. Motazedifard, A. Dalafi, M. H. Naderi, **R. Roknizadeh**  
*Controllable generation of photons and phonons in a coupled Bose-Einstein condensate-optomechanical cavity via the parametric dynamical Casimir effect*.  
Annals of Physics, **396** (2018)
52. F. Bemani, **R. Roknizadeh**, M. H. Naderi  
*Quantum simulation of discrete curved spacetime by the Bose Hubbard model: From analog acoustic black hole to quantum phase transition*, Annals of Physics, **388** (2017)
51. F. Bemani, **R. Roknizadeh**, M. H. Naderi  
*Analog curved spacetimes in the reversed dissipation regime of cavity optomechanics*, J. Opt. Soc. Am. B. **34** (2017).
50. F. Bemani, A. Motazedifard, **R. Roknizadeh**, M. H. Naderi, D. Vitali  
*Synchronization dynamics of two nanomechanical membranes within a Fabry-Prot cavity*, Phys. Rev. A. **96** (2017).
49. SA Mousavi, **R. Roknizadeh**, S. Sahebdivan.  
*Induced optical metric in the non-impedance-matched media*, Journal of Optics 18 (11), 115502 (2016).
48. A Motazedifard, F Bemani, MH Naderi, **R. Roknizadeh**, D Vitali  
*Force sensing based on coherent quantum noise cancellation in a hybrid optomechanical cavity with squeezed-vacuum injection*, New. J. Phys. (18) 073040 (2016).
47. SA Mousavi, **R. Roknizadeh**, S. Sahebdivan, S. Dehdashti  
*Curved Space-Time for Light by an Anisotropic Medium: Media with the Variab Optical Axes*, Progress In Electromagnetics Research M 49, 117-129 (2016).
46. M. Saberi, M. Bagheri Harouni, **R. Roknizadeh**,  
*Energy transfer and quantum correlation dynamics in FMO light-harvesting complex* Molecular physics, (114) 2123-2131 (2016).
45. M Saberi, MB Harouni, **R. Roknizadeh**, H Latifi  
*New approach to energy transfer and quantum correlations in a molecular dimer*, Journal of Physics B: Atomic, Molecular and Optical Physics (49)185501(2016).
44. H. Lotfipour, S. Shahidani, **R. Roknizadeh**, M. H. Nader  
*Response of a mechanical oscillator in an optomechanical cavity driven by a finite-band squeezed vacuum excitation*, Phys. Rev. A, **93**, 053827 (2016).

43. H Lotfipour, Z Allameh, **R. Roknizadeh**, H Heydari  
*Two schemes for characterization and detection of the squeezed light: Dynamical Casimir effect and nonlinear materials*, Journal of Physics B: Atomic, Molecular and Optical Physics, (49) 065503 (2016).
42. Z. Allameh, **R. Roknizadeh**, R. Masoudi, *Quantization of surface Plasmon polariton by Green's tensor method in amplifying and attenuating media*, arXiv:1505.00677, Plasmonics 21(7): 1485-1488 (2015)
41. A. Motazedifard, M. H. Naderi, **R. Roknizadeh**, *An analogue model for controllable Casimir radiation in a nonlinear cavity with amplitude-modulated pumping: Generation and quantum statistical properties* JOSA B 32(8), 1555-1563 (2015)
40. F. Bemani, **R. Roknizadeh**, M. H. Naderi, *A theoretical scheme for the realization of the sphere coherent motional states in an atom-assisted optomechanical cavity*, JOSA B 32(7), (2015).
39. Sh. Dehdashti, A. Mahdifar, **R. Roknizadeh**, *Curvature Detection by Entanglement Generation Using a Beam Splitter*, Quantum Information Processing, **14** (8) 2895-2907 (2015)
38. Sh. Dehdashti, A. Mahdifar, **R. Roknizadeh**, *Coherent states of quantum free particle on the spherical space*, Int. J. Theo. Phys. 2015 (in print).
37. **R. Roknizadeh**, H. Heydari, *Complexifier Method for Generation of Coherent States of Nonlinear Harmonic Oscillator*, Foundations of Physics, **45** (7) (2015).
36. S. R. Miri, M. K. Tavassoly, **R. Roknizadeh**  
*Generation of some entangled states of the cavity field*, Quantum Inf. Process **14**:593-606 (2014).
35. S. A. A. Ghorashi, A. Mahdifar, **R. Roknizadeh**  
*Equivalence of curvature and noncommutativity in a physical space: Harmonic oscillator on sphere*, Mod. Phys. Lett. A, Vol **29**, 1450100 (2014).
34. Sh Dehdashti, M Bagheri Harouni, A Mahdifar and **R Roknizadeh**  
*Deformed Weyl–Heisenberg algebra and quantum decoherence effect*, Laser Phys. **24**, 055203 (7pp) (2014)
33. S. R. Miri, M. K. Tavassoly, **R. Roknizadeh**  
*On the generation of number states, their single- and two-mode superpositions, and two-mode binomial state in a cavity*, J. Opt. Soc. Am. B Vol. **31**, 270 (2014)
32. Sh. Dehdashti, A. Mahdifar, M. Bagheri Harouni, **R. Roknizadeh**  
*Decoherence of spin-deformed bosonic model*, Annals of Physics, vol. **334**, 321-333 (2013).
31. **R. Roknizadeh**, H. Heydari  
*Complexifier Versus Factorization and Deformation Methods For Generating Coherent States of a 1D NLHO: I. Mathematical Construction*, Int. J. Geom. Meth. Mod. Phys. Vol. **10**, No. 10 (2013) 1350056 (1-19)
30. Sh. Dehdashti, **R. Roknizadeh**, A. Mahdifar,  
*Analogue Special and General Relativity by Optical Multilayer Thin Films: The Rindler Space Case*, J. Mod. Opt. Vol. **60**, No. 3, 233–239, 2013
29. S. Dehdashti, **R. Roknizadeh**, A. Mahdifar  
*Coherent State of  $\alpha$ -Deformed Weyl-Heisenberg Algebra*  
Int. J. Geom. Methods Mod. Phys, Vol. **10**, No. 5, 1350014-1 (2013)
28. Z. Harsij, M. Bagheri Harouni, **R. Roknizadeh**, and M. H. Naderi  
*Influence of electron-phonon interaction on optical spectrum and quantum statistics in a quantum dot-cavity system: Master equation approach*  
Phys. Rev. A **86**, 063803 (2012)

27. A. Mahdifar, B. Mirza, **R. Roknizadeh**  
*Two-dimensional isotropic harmonic oscillator on a time-dependent sphere*  
J. Phys. A: Math. Theor. **45** 465301 (2012)
26. S. A. A. Ghorashi, **R. Roknizadeh**, M. Bagheri Harouni,  
*Generalized coherent states approach to Deformation Quantization,*  
*Int. J. Mod. Phys.*, **27**, 1250095 (2012).
- 25 A. H. Alizadeh, **R. Roknizadeh** and M. H. Naderi,  
*Coherent State Path Integral Approach to Multi-Time Correlation Functions and Photon Emission in a Semiconductor Microcavity,* Journal of Modern Optics, Vol. **59**, 533–543 (2012).
24. A. Mahdifar, **R. Roknizadeh**, M.H.Naderi  
*Detection of Curvature Effects Through Physical Phenomena by Using the Nonlinear Coherent States Approach,* Int. J. Geom. Methods Mod. Phys. Vol. **9**, No. 1 (2012) 1250009.
23. G.R. Honarasa, M.K. Tavassolya, M. Hatami, **R. Roknizadeh**.  
*Nonclassical properties of coherent states and excited coherent states for continuous spectra*  
J. Phys. A: Math. Theor. **44** (2011) 085303
22. G.R. Honarasa, M.K. Tavassolya, M. Hatami, **R. Roknizadeh**  
*Generalized coherent states for solvable quantum systems with degenerate discrete spectra and their nonclassical property,* Physica A 390 (7), ( 2011)
21. A. Soltani, M. Sharif, **R. Roknizadeh**  
*The Study of Faculty Members View on Curriculum of Science Education based on the Nature of Science Properties.*  
Quarterly Journal of Research and Planning in Higher Education, No **56** (2010) 1-17.
20. Alexander Carmele, Frank Milde, Matthias-René Dachner, Malek Bagheri Harouni,  
**Rasoul Roknizadeh**, Marten Richter, and Andreas Knorr  
*Formation dynamics of an entangled photon pair: A temperature-dependent analysis*  
Phys. Rev. B **81** (2010) 195319.
19. E. Karimzadeh Esfahani, M. Bagheri Harouni, **R. Roknizadeh**,  
*Quantization of electromagnetic fields in the presence of a spherical semiconductor quantum dot and spontaneous decay of an excited atom doped in this nanostructure*  
International Journal of Optics and Photonics, **3** No. 1, (2009) 19-26.
18. M. Bagheri Harouni, **R. Roknizadeh**, M.H.Naderi,  
*Q-deformed description of excitons and associate physical results*  
J. Phys. B: At. Mol. Opt. Phys. **42** (2009) 095501.
17. M. Bagheri Harouni, **R. Roknizadeh**, M.H.Naderi,  
*Influence of phonons on exciton-photon interaction and photon statistics of a quantum dot*  
Phys. Rev. B **79**(2009) 165304.
16. M.H. Naderi, M. Soltanolkotabi, **R. Roknizadeh**  
*Deformed Harmonic Oscillator and Nonlinear Coherent States: Noncommutative Quantum Space Approach*  
Int. J. Mod. Phys. A, **24**(2009)1963-1986
15. Bagheri Harouni, **R. Roknizadeh**, M.H.Naderi,  
*Spatial confinement effects on quantum harmonic oscillator : Generating associated field coherent state,* J. Phys. A: Math. Theor. **42** (2009)
14. Bagheri Harouni, **R. Roknizadeh**, M.H.Naderi,  
*Nonlinear coherent state of an exciton in a wide quantum dot*  
J. Phys. B: At. Mol. Opt. Phys. **41** (2008) 225501
13. A. Mahdifar, W. Vogel, Th. Richter, **R. Roknizadeh**, M.H.Naderi,  
*Sphere-Coherent States in the Motion of a Trapped Ion,* Phys. Rev. A **78**, (2008) 063814
12. Mahdifar, **R. Roknizadeh**, M.H.Naderi,  
*Geometric approach to nonlinear coherent states using the Higgs model for harmonic oscillator*  
J. Phys. A: Math. Gen. **39** (2006) 7003–7014

11. **R. Roknizadeh**, M. K. Tavasoly,  
*Constructing the Dual Family of Analytical Representations of Gazeau- Klauder Coherent States via Temporally Stable Nonlinear Coherent States*  
J. Math. Phys. **46**, (2005) 042110
10. M.H. Naderi, M. Soltanolkotabi, **R. Roknizadeh**  
*A theoretical scheme for generation of nonlinear coherent states in a coherently micromaser under intensity- dependent Jaynes-Cummings model*  
Eur. Phys. J. D **32**, (2005) 80
9. M.H. Naderi, **R. Roknizadeh**, M. Soltanolkotabi  
*On the coherent states associated with deformed Bogoliubov  $(p,q)$ -transformations without first finite Fock states*  
Progress of Theoretical Physics, Vol. **112**(2004)811
8. M.H. Naderi, **R. Roknizadeh**, M. Soltanolkotabi,  
*Harmonic oscillator realization of the deformed Bogoliubov  $(p,q)$ -transformations without first finite Fock states*  
Progress of Theoretical Physics, Vol. **112**(2004)797
7. M. H. Naderi, M. Soltanolkotabi, **R. Roknizadeh**  
*Dynamical Properties of a two-level atom in three variants of the two-photon  $q$ -deformed Jaynes Cummings model*  
Journal of Physical Society of Japan, Vol. **73**(2004), No. 9, 2413-2433.
6. **R. Roknizadeh**, M. K. Tavassoly  
*The Construction of Some Important Classes of Generalized Coherent States: The Nonlinear Coherent States Method*  
J.Phys. A: Math. Gen **37**(2004) 8111-8127.
5. M. H. Naderi, M. Soltanolkotabi and **R. Roknizadeh**  
*On a family of photon-added deformed coherent states associated with two-parameter deformed boson oscillator algebra*  
Canadian Journal of Physics **82**(2004)623-646
4. **R. Roknizadeh**, M. K. Tavassoly  
*Representations of Coherent and Squeezed States in  $f$ -Deformed nonlinear Fock space,*  
J. Phys. A: Math. Gen. **37**(2004)5649-5660
3. S. T. Ali, **R. Roknizadeh**, M. K. Tavassoly,  
*Representations of Coherent States in Non Orthogonal Bases*  
J. Phys. A: Math. Gen. **37**(2004)4407-4422
2. M. H. Naderi, M. Soltanolkotabi, **R. Roknizadeh**,  
*New photon-added and photon-depleted coherent states associated with inverse  $q$ -boson operators: nonclassical properties* J. phys. A: Math .Gen, **37**(2004)3225-3240
1. **R. Roknizadeh**,  
*Geometric Formulation of Berezin Deformation Quantization,*  
Iranian Journal of Physics Research, Vol. 3, No.2, 139-151, 2002.

## 4. Preprint

- 1- M. Momeni Demneh, A. Mahdifar, **R. Roknizadeh**  
*Nonlinear optical effects on the atom-field interaction based on the nonlinear coherent states approach*, arXiv:2107.08464

## 5. Research Projects and Contracts

1. *Berezin Quantization in Quantum Field Theory* (in Persian)  
University of Isfahan December 2004 (Lecture Notes in: <http://www.iqog.ir> )
2. *The study of optical characteristics of nano-structure materials and the feasibility of nano-optics application in lighting industry of Iran*

Iranian Nanotechnology Initiative (2007)

3. Founding of Center of Quantum Science and Technology (2022)

## 6. Published Lectures in Conferences

1. **R. Roknizadeh**,  
*Mathematical Machinery for Producing Coherent States*,  
Proceedings of the 7th Annual Conference on Photonics 2000-Tehran
2. **R. Roknizadeh**, H. D. Doebner  
*Geometric Formulation of Berezin Quantization*,  
Proceedings of Institute of Mathematics of NAS of Okrain (2002) Vol. 43, Part 2, 678-683
3. M. Soltanolkotabi, **R. Roknizadeh**, M.H. Naderi  
*A study of quantum optical properties of nonlinear coherent states of radiation field using Displacement operator approach*  
Proceeding of the 8th Annual Conference on Photonics, Feb. 2002
4. M. Daei Mohammad, M. H. Naderi, **R. Roknizadeh**, M. Soltanolkotabi,  
*Quantum Theory of Induced Electromagnetic transparency for Three Level Atoms with  $\Lambda$ -Configuration: Density Operator Approach*,  
Proceedings of Annual Physics Conference, August 2003
5. **R. Roknizadeh**, M. K. Tavassoly,  
*Coherent and squeezed states in a nonorthogonal and normalizable Fock Space*,  
Proceedings of Annual Physics Conference, Tehran 2003.
6. M. Soltanolkotabi, **R. Roknizadeh**, M.H. Naderi  
*On mathematical structure and quantum optical properties of deformed coherent states of Radiation field: Non-commutative quantum space approach*  
Proceeding of the 9th Annual Conference on Photonics, Feb. 2003
7. **R. Roknizadeh**, M. K. Tavassoly  
*Generation of KPS generalized coherent states through nonlinear coherent states*  
Proceeding of the 10th Annual Conference on Photonics, January 2004.
8. M. H. Naderi, M. Soltanolkotabi, **R. Roknizadeh**,  
*Dynamical properties of a two-level atom in the two-photon deformed Jaynes-Cummings model*  
Proceeding of the 10th Annual Conference on Optics and Photonics, January 2004.
9. S. T. Ali, **R. Roknizadeh**, M. K. Tavassoly,  
*Presentation a Mathematical Physics Structure for Constructing Coherent States*  
Proceedings of Physics Conference, August 2004. pages: 31-33.
10. **R. Roknizadeh**, M. K. Tavassoly,  
*Generalized coherent states of temporal sability*  
Proceeding of the 11th Annual Conference on Optics and Photonics, 2-3 Feb 2005
11. R. Namazi Rizi, **R. Roknizadeh**, M. Soltanolkotabi  
*Calculation of multi electrons atoms wave function via wavelets theory and its application in quantum optics*  
Proceeding of the 11th Annual Conference on Optics and Photonics, 2-3 Feb 2005
12. E. Karimzadeh, **R. Roknizadeh**, and M. H. Naderi  
*Quantization of electromagnetic field in presence of single spherical quantum dot*  
Proceeding of the 12th Annual Conference on Optics and Photonics,  
31. Jan- 2. Feb 2006 Shiraz, Iran
13. A. Mahdifar, **R. Roknizadeh**, and M. H. Naderi  
*Structural and Quantum Optical properties of Coherent States on the Non-Flat Surfaces: Nonlinear Coherent States approach*  
Proceeding of the 12th Annual Conference on Optics and Photonics,  
31. Jan- 2. Feb 2006 Shiraz, Iran
14. A. Mahdifar, **R. Roknizadeh**, and M. H. Naderi  
*Geometric Nonlinear Coherent States*,  
AIP Conf. Proc. **956**, 245 (2007)  
XXVI Workshop on Geometric Methods in Physics, Bialowieza, Poland, July 1 -7,2007
15. **R. Roknizadeh**, H. Sabzian  
*Quality and Provision in a Higher Educational System*  
Proceeding of the 10<sup>th</sup> Iranian Physical Chemistry Seminar, April 2007
16. A. Mahdifar, **R. Roknizadeh**, and M. H. Naderi  
*Detection of Spatial Curvature Effects Through the trapped Atom System*  
Proceeding of the 14<sup>th</sup> Conference on Optics and Photonics, 29-31 January 2008
17. M. Bagheri Harouni, **R. Roknizadeh**, and M. H. Naderi  
*Spatial Confinement Effects on Quantum Optical Properties of Nano Structures*  
Proceeding of the 14<sup>th</sup> Conference on Optics and Photonics, 29-31 January 2008

18. **R. Roknizadeh**, S. Sahebdivani  
A Semigroups Approach in Decoherence Theory  
Third Workshop of Harmonic Analysis and Wavelets, University of Mashhad, 24-26 Dec. 2008
19. Mahdifar, **R. Roknizadeh**, and M. H. Naderi  
Proceeding of the 15<sup>th</sup> Conference on Optics and Photonics, 27-29 January 2009
20. A. Mahdifar, Sh. Dehdashti and **R. Roknizadeh**  
*Entanglement Generation from Nonlinear Coherent States Using a Beam Splitter*  
Proceeding of the 16<sup>th</sup> Conference on Optics and Photonics, January 2010
21. M. Bagheri Harouni,; **R. Roknizadeh**, M. H. Naderi; A. Carmele, A. Knorr,  
*Wetting layer effects on generating polarization-entangled photons from a single quantum dot*  
Proceeding of the 16<sup>th</sup> Conference on Optics and Photonics, January 2010
22. G. Honarasa, M. K. Tavassoly, M. Hatami, **R. Roknizadeh**  
*Generalized Coherent States for solvable Quantum Systems with Degenerate spectra and Their Nonclassical Properties*,  
17<sup>th</sup> Iranian Conference on Optics and Photonics, 8-10 Feb. 2011
23. G. Honarasa, M. K. Tavassoly, M. Hatami, **R. Roknizadeh**  
*Excited Coherent States for Continuous Spectra and Their Nonclassical Properties*  
17<sup>th</sup> Iranian Conference on Optics and Photonics, 8-10 Feb. 2011
24. Z. Harsij, M. Bagheri Harouni, **R. Roknizadeh**, M. H. Naderi,  
Optical properties of a quantum dot system inside a microcavity in the presence of phonons  
17<sup>th</sup> Iranian Conference on Optics and Photonics, 8-10 Feb. 2011.
25. M. Seyedkhamoushi, **R. Roknizadeh**, M. Bagheri Harouni.  
*Even and odd nonlinear coherent states of an exciton in a wide quantum dot*  
17<sup>th</sup> Iranian Conference on Optics and Photonics, 8-10 Feb. 2011.
26. A. H. Alizadeh, **R. Roknizadeh**, M. H. Naderi,  
*Coherent-State Path Integral Approach to Partition Function and Multi-Time Correlation Function of Interacting System*,  
18. Annual Physics Conference, Orumieh 1390, Pages 129-133. August 2011.
27. A. Allahi, **R. Roknizadeh**, M. Vafae,  
*Helium in ultra short intense pulses: simulation by Schrodinger and von Neumann Equation*, 18. Annual Physics Conference, Orumieh 1390, Pages 145-148., August 2011.
28. **R. Roknizadeh**, S.A. A. Ghorashi, H. Heydari  
*Correspondence Between Classical and Quantum Theory by  $\mathfrak{f}\mathfrak{f}$ -Deformed Coherent State*  
AIP Conf. Proc. 1508 (2012), pp. 474-477 (4 pages)
29. S. A. Mousavi, **R. Roknizadeh**, Sh. Dehdashti  
Analogy between anisotropic layered media with variable optical axes and curve space-time for extra ordinary ray, Proceeding of: 21. Conf. Opt. Photonics of Iran, p. 31, 2015.
30. M. Saberi, **R. Roknizadeh**, M. Bagheri Harouni  
Influence of non-Markovian Stochastic Noises on Dynamics of Quantum Entanglement in Photosynthetic Dimer System, Proceeding of: 21. Conf. Opt. Photonics of Iran, p. 60, 2015.
31. Z. Allameh, **R. Roknizadeh**, R. Massudi,  
Quantization of surface Plasmon polariton field by tensor Green's function method  
Proceeding of: 21. Conf. Opt. Photonics of Iran, p. 29, 2015.
32. M. Saberi, **R. Roknizadeh**, M. Bagheri Harouni,  
Theoretical Study of Quantum Entanglement Dynamics in a Photosynthetic Dimer System  
Proceeding of: 21. Conf. Opt. Photonics of Iran, p. 35, 2015.
33. F. Bemani, **R. Roknizadeh**, M. H. Naderi, The Schrödinger cat state generation in an atom-assisted  
optomechanical cavity, Annual Physics Conference of Iran, 24. August 2015.
34. A. Motazedifard, M. H. Naderi, **R. Roknizadeh**, Analog model for controllable generation  
Of the Casimir cavity with time-modulated pumping,  
Annual Physics Conference of Iran, 24. August 2015.
35. H. Lotfipour, S. Shahidani, **R. Roknizadeh**, Detection of input quantized squeezed probe field by  
optomechanical system, Annual Physics Conference of Iran, 24. August 2015.
36. H. Lotfipour, **R. Roknizadeh**, Characterization and detection of squeezed light  
Effect, Annual Physics Conference of Iran, 24. August 2015.

## 7. Lectures and Invited Talks

1. *Geometry of Quantum Mechanics*,  
Spring Conference of IPM, 2000.
2. *Geometric Quantization*,  
Research Week, University of Isfahan 2000.

3. *Quantum Mechanical Entanglement*,  
Research Week , University of Isfahan 2001.
4. *Geometry of Coherent States and Complex Structure of Quantum Mechanics*,  
Research Week , University of Isfahan 2002.
5. *Nonlinear Coherent States*, (As visiting Professor)  
Dept. Math. Stat., University of Concordia, Montreal, Canada, 2002
6. *Geometric Formulation of Berezin Quantization*, (As visiting Professor)  
Dept. Math. Stat, University of Concordia, Montreal, Canada, 2002.
7. *Quantum Mechanical States Preparation*,  
Workshop on Atomic Coherence and new Trends in Quantum Optics, Tabriz 2003.
8. *Harmonic Analysis in Quantization theory*,  
Workshop on Abstract Harmonic Analysis, Mashhad 2003
9. *Nonlinear Coherent States as a Method*  
XXIII Workshop on Geometric Methods in Physics, Bialowieza, Poland,  
June 27-July 3, 2004
10. *Berezin Quantization in Field Theory*  
Research Week, University of Isfahan 2004
11. *Generalization of Temporally Stable Gazeau-Klauder Coherent States*  
Research Week, University of Isfahan 2004
12. *The New Approaches to Generalized Coherent States*  
Annual Physics Conference, Shahrood, 26-28 August 2006.
13. *Quantum Optics of Nanostructures*  
Annual Physics Conference, Kashan, 25-28 August 2008.
14. *Coherent States in nanostructures*  
Expository Quantum Lecture Series (EQuaLS2), Malaysia 24-28 November 2008
15. *Quantum Optics on Curved Spaces*  
Physics Conference of Payame Noor University, 25-28 August 2008
16. *Decoherence Effects on Optical Properties of Nanostructures*.  
17<sup>th</sup> Iranian Conference on Optics and Photonics, 8-10 Feb. 2011.
17. *Some philosophical Aspects of Philosophical Foundations of Quantum Mechanics*,  
Annual Physics Conference of Iran, September 2014.
18. *Kochen-Specker Theorem and Realism in Quantum Mechanics*  
Research week in University of Isfahan, November 2014.
19. *Three Types of Generalized Coherent States for NLHO*  
QTPA14 9-12 ,Linnaeus University, Vaxjo-Sweden June 2014.

## 8. Teaching Graduate Courses

1. Theoretical Foundations of Quantum Mechanics
2. Advanced Group theory
3. General Relativity
4. Geometry and Topology
5. Special Topics in Mathematical Physics

6. Quantum Electrodynamics
7. Advanced Quantum Mechanics
8. Advanced Classical Mechanics
9. Advanced Mathematical Physics
10. Quantum Optics
11. Quantum Field Theory
12. Optics of Nanostructures
13. Physics and Philosophy
14. Classical Mechanics for Mathematicians
15. Quantum Mechanics for Mathematicians
16. Relativistic Quantum Mechanics
17. Electrodynamics
18. Mathematical and Informational Structure of Quantum Mechanics

## 9. Teaching Undergraduate Courses

1. Quantum Mechanics
2. Modern Physics
3. Classical Mechanics
4. Electricity and Magnetism

## 10. Graduate Students

Number of the students in past or presently under supervision

**PhD: 12                      MSc: 20**

Number of the students in past or presently under co-supervision

**PhD: 2**

## 11. Students Thesis

*The prepared or in preparation PhD or MS thesis under supervision*

1. *Coherent States of Poincare Group* (MS Thesis)  
A. Momeni, Feb 2004
2. *Wavelet Analysis Application in Quantum Optics* (MS Thesis)  
R. Namazizadeh, Mars 2005.
3. *Construction of Generalized Coherent States in orthogonal and non-orthogonal basis*  
(PhD Thesis)  
M. K. Tavassoly, June 2005.
4. *Generation of Nonclassical Light by Quantum Dots* (MS Thesis)  
M. Shahmoradi, Mars 2006
5. *Quantization of Electromagnetic Field in Presence of Quantum Dots* (MS Thesis)  
A. Karimzadeh, Mars 2006
6. *Geometric Structure of Nonlinear Coherent States* (PhD Thesis)  
A. Mahdifar (Dec. 2007)
7. *Interaction of Non Classical Light with a two level Atom* (MS Thesis)  
H. Tavakoli, Oct 2006
8. *Theoretical Schemes for Generation of nonlinear Coherent States in Nanostructures*  
(PhD Thesis) M. Bagheri Harouni. August 2009.
9. *The Optical Effects of Decoherence in Nanostructures* (MS Thesis)  
V. Tayari, July 2008
10. *Mathematical Structure of Decoherence Theory in Framework of Berezin  
(De)Quantization Method*, (MS Thesis) S. Sahebdivani, Feb. 2009
11. *Integrable Systems in Quantum Optics*,  
(MS Thesis) M. Kamandar Dezfouli, Sep. 2009.

12. Coherent States Approach to Geometric Quantization  
(MS Thesis) N. Shokrani, Nov. 2009
13. Quantum Control in Nanostructure  
(MS Thesis) R. Ashrafi Amineh, Oct. 2010
14. Quantum Optics of Semiconductor Microcavities in the Presence of Quantum Dots  
(MS Thesis) Z. Harsij, October 2010.
15. Detection of Nonclassical Light by a Nanostructure  
(MS Thesis) S. Mehr Nejat, October 2010.
16. Generation of some generalized Coherent States by Using Nano-Structures  
(MS Thesis) M. Seyedkhamooshi, September 2011.
17. Theoretical Foundations and Applications of Nano-Structures Quantum Optics in Atto-Second Scale. (Ms Thesis) A. Allahi, September 2011.
18. Theoretical Scheme for Detection of Nonclassical Light by Interaction with Nano-Structures (MS Thesis) Z. Allameh, September 2011.
19. Quantum Zeno Effect  
(Ms Thesis) F. Farzam, July 2011.
20. Investigation of Transport in Nanostructures by Quantum Field Theory Methods  
(PhD Thesis) A. H. Alizadeh. Nov. 2011
21. Sh. Dehdashti, (PhD Thesis) 15. Feb. 2014.
22. Nonclassicality criteria in Quantum optical systems, Z. Zolghadr (MS Thesis) February 2014
23. Analogue general relativity in optical media: application of geometric formulation of electromagnetic waves propagation in dielectric media within transformation optics, A. Mousavi (PhD Thesis) October 2016.
24. Nonclassical states detection in an optomechanical system (MS Thesis) E. Kashi, February 2015.
25. Control and protection of quantum coherence in photosynthesis process, M. Saberi (PhD Thesis) 2017
26. Modeling the optomechanical sensors for nonclassical light (in particular squeezed light) Detection, H. Lofipour, (PhD Thesis) September 2016.
27. Quantum Plasmonics, (PhD Thesis) Z. Allameh
28. The theoretical schemes for generation and control of the dynamical Casimir effect in nonlinear hybrid optomechanical systems A. Motazedifar (PhD Thesis) Feb. 2018.
29. Analogue space-time in a Bose-Einstein condensate-assisted optomechanical system, F. Bemani (PhD Thesis) Feb. 2018.
30. An Analysis of Quantum Noises in Detection, Amplification, and measurement, Mojdeh Bakhtyar (MSc Thesis) 16. Feb. 2016.
31. Quantum Mechanical Approach to Nonlinear Optics Based on Nonlinear Coherent States. M. Momeni Demneh (2022)

## 12. Other Professional Activities, Experiences and Membership

- Assistant Professor in University of Isfahan Dec.1999- Feb 2005
- Associate Professor in University of Isfahan Feb 2005 – 2013
- Professor of Theoretical Physics in University of Isfahan, 2013-
- Member of: Physical Society of IRAN ,
- Optics and Photonics Society of IRAN,
- Deutsche Physikalische Gesellschaft (Germany Physical Society)
- Director of Quantum Optics Group (IQOG), University of Isfahan (2015-2020)
- Director of Center of Quantum Science and Technology, University of Isfahan (2022- )

### Acted as referee for

- Journal of Mathematical Physics (AIP)
- Journal of Physics A: Math. Theo. (IOP)
- Journal of Physics B (IOP)
- Iranian Journal of Physics Research

### 13. Interests

- Mathematical (Geometrical) and Theoretical Foundations of Quantum Mechanics
- Quantization Methods
- Quantum Optics and its Applications in Nano structures
- Mathematical Structure of Coherent States and Their Applications
- Philosophy of Quantum Physics
- Quantum Technology

### 14. Award

- National Excellent Professor 2023 (1402)
- National Excellent Scientist in Founding the Relationship of University and Industry 2023.
- Excellent Lecturer of University of Isfahan in Year 2008 (1387)

### 15. Visiting Professor

1. Department of Mathematics and Statistics, University of Concordia, Montreal, Canada, 2002.
2. University of Bialystok -Poland. 2008
3. Quantum Computing and Quantum Information, Fysikum, Stockholm University, Stockholm, Sweden, 2012.

### 16. Book Translation from English to Persian

1. Quantum Philosophy, by: R. Omnes, (Published by “University Press Center” 2016)
2. On Physics and Philosophy, by: B. d’Espagnat (Published by “Qugnus Press” 2020)
3. Wisdom Key, by: N. Maxwell (Published by Hekamt-House, 2023)
4. Cosmos and Transcendence, by: W. Smith (Published by Naghd-e Farhang 2024)