Dr. Golam Ali Sekh
Assistant Professor & Coordinator
Department of Physics
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Current Research Interest: Ultra-cold Quantum gases, Bose-Einstein Condensates, Nonlinear Dynamics, Nonlinear Optics

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Educational Qualification:

2005-2011 : Ph. D in Physics (Visva-Bharati Unviversity)

2001-2003 : M. Sc in Physics (Visva-Bharati University)

2004 : NET-JRF in Physical Science, CSIR-UGC

Employment:

- **2018 – date:** Assistant professor Department of Physics, Kazi Nazrul University, India
- **2017 – 2018:** Assistant professor UG and PG Department of Physics, B.B. College, India
- **2015 - 2017:** Assistant Professor Department of Physics, University of Kashmir, India
- **2014- 2015:** Post Doctoral Fellow National Institute of Nuclear Physics, Bari, Italy
- **2013 – 2014:** Assistant Professor Department of Physics, University of Kashmir, India
- **2012 – 2013:** Post Doctoral Fellow Institute of Physics Belgrade, Belgrade, Serbia
- **2011 – 2012:** Post Doctoral Fellow Physics Dept, Università degli Studi di Salerno, Italy

Sponsored Research Project:

- Spin-orbit coupled Bose-Einstein condensates in optical lattices
  (CRG/2019/000737/,*SERB, Govt. of India*)
  Duration: 3 Years (19-02-2020 -18-02-2023)

Supervisions:

(a) Ph. D Project

- Proposed Thesis Title: Dynamics of optical pulse in higher-order nonlinear systems
  Student's Name: Mr. *Sudipta Das*
  Current Status: Ongoing

(b) M. Sc Project

- Bose-Einstein condensation in external traps (2013, Kashmir University)
- Properties of Bose-Einstein condensates (2016, Kashmir University)
- On the pulse propagation in optical fibers (2017, B. B. College)
- Solitons in optical communication (2017, B.B. College)
- Static and dynamic properties of kink soliton (2019, Kazi Kazrul University)
- Fisher information of 1D linear harmonic oscillator. (2019, Kazi Nazrul University)

Award and Fellowship:

- National Eligibility Test (Lectureship & Junior Research Fellowship, UGC, INDIA)
- Dr D S Kothari Post Doctoral Fellowship, UGC, India
- Young Scientist Fellowship/Project, DST, India
- Post Doctoral Fellowship, National Institute of Nuclear Physics, Italy

List of publication in peer-reviewed journals:

1. Sudipta Das, Kajal Krishna Dey and **Golam Ali Sekh**, Optical solitons in saturable cubic-quintic nonlinear media with nonlinear dispersion, Optik (2021), to be appeared.
2. Kajal Krishna Dey and **Golam Ali Sekh**, Effects of random excitations on the dynamical response of Duffing systems, Journal of Statistical Physics 182, **18** (2021).
3. Sudipta Das and **Golam Ali Sekh**, Dynamics of compressed optical pulse in cubic-quintic media, Fiber & Integrated Optics **39**, 122(2020).
4. **Golam Ali Sekh**, B. Talukdar and Supriya Chatterjee, Insights from intracules and Coulomb holes, Eur. J. Phys. **41,** 045403(2020).
5. Benoy Talukdar, Supriya Chatterjee and Golam Ali Sekh, On the analytic representation of Newtonian systems, Pramana- Journal of Physics, (2020). (accepted for publication)
6. Supriya Chatterjee, **Golam Ali Sekh** and B. Talukdar, Fisher Information for the Morse Oscillator, Reports on Mathematical Physics **85**, 281(2020).
7. **Golam Ali Sekh** and Pallavi Kalikotay, Dynamics of self-reinforcing matter-wave in gravito-optical surface trap, Chaos **29**, 103112 (2019).
8. Kajal Krishna Dey, Sudipta Das, and **Golam Ali Sekh**, On the information entropy of matter-waves in quasi-periodic lattice potentials, **Eur. Phys. J. D 73,** 18 (2019).
9. B. Talukdar, A. Saha, S. Chatterjee and **Golam Ali Sekh,** Entropic uncertainty relation and revival structure of quantum wave packets, **Eur. Phys. J. Plus 133**, 480 (2018).
10. **Golam Ali Sekh**, A. Saha and B. Talukdar, Shannon entropies and Fisher information of K-shell electrons of neutral atoms, **Physics Letters A 382**, 315 (2018).

11. **Golam Ali Sekh**, Bouncing dynamics of Bose-Einstein condensates under the effects of gravity, **Physics Letters A 381**, 852 (2016).
12. **Golam Ali Sekh**, Francesco V. Pepe, Paolo Facchi, Saverio Pascazio, Mario Salerno, Split and overlapped binary solitons in optical lattices, **Phys. Rev. A 92**, 013639 (2015).
13. Paolo Facchi, Saverio Pascazio, Francesco V. Pepe, **Golam Ali Sekh**, Typical observables in a two-mode Bose system, **Physical Review A 91**, 033637(2015).
14. Paolo Facchi, Hiromichi Nakazato, Saverio Pascazio, Francesco V. Pepe, **Golam Ali Sekh**, Kazuya Yuasa, Phase randomization and typicality in the interference of two condensates, **Int. J. Quantum Inform. 12**, 1560019 (2014).
15. **Golam Ali Sekh**, Matter-wave bright solitons in effective bi-chromatic lattice potentials, **Pramana : J. Phys. 81,** 261(2013).
16. **Golam Ali Sekh**, Mario Salerno, Aparna Saha and Benoy Talukdar, Displaced dynamics of binary mixtures in linear and nonlinear optical lattices, **Phys. Rev. A** 85, 023639 (2012).
17. **Golam Ali Sekh**, Effects of spatially inhomogeneous atomic interactions on Bose–Einstein condensates in optical lattices, **Physics Letters A 376**, 1740(2012).
18. Debabrata Pal, **Sk Golam Ali** and B Talukdar, Stability of embedded solitons in higher-order NLS equations**, Phys. Scripta 83**, 025009 (2011).
19. **Sk. Golam Ali**, S.K. Roy and B. Talukdar, Stability of matter-wave solitons in optical lattices, **Eur. Phys. J. D 59**, 269(2010).
20. **Sk. Golam Ali**, B.Talukdar and Aparna Saha, Effects of three - body atomic interaction and optical lattice on solitons in quasi one - dimensional Bose-Einstein Condensates, **Pramana : J. Phy**s. **72**, 445(2009).
21. **Sk. Golam Ali** and B. Talukdar, Coupled matter-wave solitons in optical lattices, **Ann. Phys. (NY) 324**, 1185 (2009).
22. Debabrata Pal, **Sk. Golam Ali** and B. Talukdar, Evolution of optical pulses in the presence of third-order dispersion, **Pramana : J. Physics 72**, 939(2009).
23. Debabrata Pal, **Sk. Golam Ali** and B. Talukdar , Embedded solitons in the third-order nonlinear Schrodinger equation , **Phys. Scr. 77**, 065401 (2008).
24. D. Pal, **Sk. Golam Ali** and B. Talukdar, Embedded Soliton Solutions: A Variational Study, **Acta. Phys. Polo. A 113**, 707 (2008).
25. **Sk. Golam Ali** and B. Talukdar, Matter-wave bright solitons: Internal atomic recombination and external feeding, **Eur. Phys. J. D 46**, 46315(2008).
26. **Sk. Golam Ali**, S. K. Roy and B. Talukdar, Bright Soliton in Asymmetrically Trapped Bose-Einstein Condensates, **Acta., Phys. Polo. A** , **111**, 289(2007).
27. **Sk. Golam Ali**, S.K. Roy and B. Talukdar, Matter-Wave Bright Solitons of 7Li Gas in an Expulsive Potential, **Acta. Phys. Polo. A 112**, 1165 (2007).

28. **Sk. Golam Ali**, B. Talukdar and U. Das, Inverse problem of variational calculus for nonlinear evolution equations, **Acta Phys. Polo. B 38**, 1993(2007).
29. **Sk. Golam Ali,** Debabrata Pal and B.Talukdar, Applications of variational calculus to coupled pulse propagation in an optical fiber, **Czech. J. Phys**. **56**, 217 (2006).

Research and development/training experience

1. Summer School on Low-dimensional many-body quantum systems, Trier, Germany (16 -21, August, 2012)
2. DST winter school on nonlinear dynamics (27 January-18, February, 2014), Panjab University, India
3. Workshop on Quantum Mechanics and Application (30 June -10, July, 2015), University of Bari, Italy
4. Indian Science Academy Refresher Course on Experimental Physics (12 -27, April, 2016), KU, India
5. One week faculty development programme on "Academic Writing" (18 February, 2021 - 24 February, 2021), Teaching Learning Centre, Ramanujan College, University of Delhi.
6. One week faculty development programme on "Open Source Tools for Research" (03 - 09 April, 2021), Teaching Learning Centre, Ramanujan College, University of Delhi.
7. Faculty Induction Programme (March 02-29, 2021), UGC-Human Resource Development Centre (HRDC), University of Calcutta

Course/Topic Taught

(*a*) Post Graduate

- Mathematical Physics
- Classical Electrodynamics
- Numerical Methods
- Bose-Einstein condensates (Special paper)
- Super Conductivity
- Nuclear and Particle Physics
- Thermal and statistical Physics
- Atomic and Molecular Physics

(*b*) Under Graduate

- Thermal Physics
- Wave Motion
- Physical Optics
- Vector Analysis
- Statistical Physics