

GOVERNMENT DUNGAR COLLEGE, BIKANER

Faculty Profile

1. Name: Dr. AJAYA KUMAR NAGAR
2. Department: PHYSICS
3. Designation: Associate Professor
4. Qualifications: M.Sc.(Physics), Ph.D. (Nonlinear Optics)
5. Date of Joining college: 27/10/1995
6. Teaching Experience: 24 Yrs.
7. Research Experience: 27 Yrs.
8. Research Interests: Nonlinear Optics, Mathematical & Computational Physics, Microwave Electronics, etc.



9. Details of Ph.D. scholars:

S. No	Name of Scholar	Title	Status
1	Dr. Shivangi Bissa	Study of Laser induced Structural Phase Transformation Mechanisms in Nanoscale Materials and Their Applications in Optical Fiber Communication.	Awarded
2	Dr. Preeti Naruka	Study of propagation of stationary optical pulses in Dispersive Dielectric Fibers and their application to Nanoscale Devices	Awarded
3	Dr. Bhuvneshwar Suthar	Investigation Of Band Structure Of Linear And Non-Linear Photonic Crystals And Their Applications In Optical Communication	Awarded
4	Dr. Praveen Kumar Upadhyay	A Theoretical & Computational Study Of Nonlinear Waves and Solitons with Applications to Nanoscale Devices	Awarded
5	Dr. Arvind Sharma	Study of Nonlinear Processes and their Applications to Nanoscale Devices	Awarded
6.	Dr. Vijendra Kumar	A Study of Soliton Dynamics in Laser Matter Interaction	Awarded
7.	Shri Om Prakash Swami	A Study of Nonlinear Schrodinger Equation and its Applications in Nanomaterials	Viva Exam Conducted

10. Research Publications:

1. A THEORETICAL STUDY OF LIGHT SOLITON PRODUCED BY SEMICONDUCTOR QUANTUM DOT WAVEGUIDES AND PROPAGATION IN OPTICAL FIBERS, OP Swami, V Kumar, B Suthar, AK Nagar Вестник Московского государственного технического университета им. (2019)
2. Stability of intersite dark solitons in a parametrically driven discrete nonlinear Schrödinger equation OP Swami, V Kumar, B Suthar, AK Nagar, Nanosystems: Physics, Chemistry, Mathematics 10 (4), 391-397 (2019)

3. A theoretical study of the propagation of light soliton produced by semiconductor quantum dots through optical fibers, OP Swami, V Kumar, B Suthar, AK Nagar, *Nanosystems: Physics, Chemistry, Mathematics* 10 (3), 273-281 (2019)
4. A mathematical model for performance of Proton exchange membrane fuel cell as a nonlinear voltage processes, A Sharma, AK Nagar, *International Journal of Advanced Research in Computer Science* 8 (1) 1 (2017)
5. Study of surface Soliton at the interface between a semidiscrete one-dimensional Kerr-nonlinear system and a continuous medium (slab waveguide) OP Swami, V Kumar, AK Nagar (2017)
6. Multi Photonic Band Gap Silica Gallium Nonlinear Omnidirectional 1 D Photonic Crystal A Sharma, AK Nagar (2017)
7. A Phase Plane Analysis of Discrete Breathers in Carbon Nanotube , A Sharma, AK Nagar (2017)
8. Interaction of solitons with a string of coupled quantum dots, V Kumar, OP Swami, S Taneja, AK Nagar, *AIP Conference Proceedings* 1728 (1), 020636 (2016)
9. Dependence of reflection and transmission of soliton on angle of incidence at an interface between chalcogenide fibre and gallium nanoparticle film by phase plane trajectories, P Naruka, S Bissa, AK Nagar, *AIP Conference Proceedings* 1728 (1), 020282 (2016)
10. Origin of optical bistability and hysteretic reflectivity on account of nonlinearity at optically induced gallium silica interface, A Sharma, AK Nagar, *AIP Conference Proceedings* 1728 (1), 020183 (2016)
11. Plasmonic lattice solitons in metallic nanowire materials OP Swami, V Kumar, AK Nagar *AIP Conference Proceedings* 1728 (1), 020447 (2016)
12. Interaction of vector solitons and beam break up at thin film gallium-silica waveguide structure A Sharma, AK Nagar, *AIP Conference Proceedings* 1728 (1), 020450 (2016)
13. Existence and stability of dark solitons in Bose-Einstein condensate in parabolic trapped optical lattices, V Kumar, OP Swami, AK Nagar, *International Journal of Scientific & Engineering Research* 5 (3), 329-331 3 (2014)
14. Stability of Parametrically Driven Dark Lattice Solitons in Nanoscale Systems, OP Swami, V Kumar, AK Nagar, *International Journal of Scientific & Engineering Research* 5 (10), 1212-12142 (2014)
15. Soliton Pulse analysis in AgAs₂Se₃ Photonic Crystal Waveguide, A Sharma, PK Upadhyay, AK Nagar, *International Journal of Advanced Research in Computer Science* 4 (11) (2013)
16. Stability of discrete solitons in a hexagonal lattice, A Sharma, V Kumar, AK Nagar *AIP Conference Proceedings* 1536 (1), 761-762 (2013)
17. Soliton reflectance at the gallium silica interface, P Naruka, S Bissa, AK Nagar *AIP Conference Proceedings* 1536 (1), 753-754 (2013)
18. Electron phonon interaction in K-doped (9, 9) carbon nanotube, PK Upadhyay, AK Nagar *AIP Conference Proceedings* 1536 (1), 99-100 (2013)
19. Light Induced Soliton Switching at the Gallium-Silica Interface P Naruka, S Bissa, *International Journal of Modern Physics: Conference Series* 22, 471-477 (2013)
20. Laser Induced Nonlinear Optical Response of Carbon Nanotubes Deposited on a Dielectric Substrate, S Bissa, P Naruka, *International Journal of Modern Physics: Conference Series* 22, 686-693 (2013)
21. Soliton Pulse Analysis in GaInP Photonic Crystal Waveguide PK Upadhyay, AK Nagar, *International Journal of Modern Physics: Conference Series* 22, 675-678 (2013)
22. Bright solitons in a parametrically driven discrete nonlinear schrodinger equation, OP Swami, V Kumar, AK Nagar, *International Journal of Modern Physics: Conference Series* 22, 570-575, 4 (2013)
23. Electron Phonon Interaction in K-Doped (10, 10) Carbon Nanotube, PK Upadhyay, AK Nagar, *International Journal of Modern Physics: Conference Series* 22, 670-674 3 (2013)

24. Discrete modulational instability in parametrically driven optical lattices, OP Swami, A Sharma, AK Nagar, AIP Conference Proceedings 1536 (1), 757-758 2 (2013)
25. Propagation characteristics at Ga-Si interface: A phase-plane analysis, S Bissa, P Naruka, MS Shekhawat, AK Nagar, AIP Conference Proceedings 1447 (1), 783-784 (2012)
26. GEOMETRICAL INFLUENCE ON PHOTONIC BANDGAP OF THREE DIMENSIONAL CHALCOGENIDE PHOTONIC CRYSTALS, B Suthar, AK Nagar, A Bhargava, Journal of Ovonic Research Vol 6 (4), 181185 (2010)
27. Radiative effects of soliton scattering from two nonlinear media, P NARUKA, S Bissa, AK Nagar J. Intense Puls. Lasers Appl. Adv. Phys. 1 (2), 43-47 3 (2011)
28. Soliton Scattering by an Interface of Gallium Nanoparticles and Monomode Optical Fiber
P Naruka, S Bissa, R Mathur, AK Nagar, AIP Conference Proceedings 1349 (1), 761-762 1 (2011)
29. ULTRASHORT LASER INDUCED OPTICAL SWITCHING EFFECTS OF Ga NANOPARTICLE FILMS
S Bissa, A Bhargava, AK Nagar, Journal of Ovonic Research Vol 6 (1), 51-56 2 (2010)
30. Slow light transmission in chalcogenide photonic crystal waveguide, B Suthar, AK Nagar, A Bhargava, Journal of electronic science and technology 8 (1), 39-42,14 (2010)
31. WAVEGUIDE BEND FILTER APPLICATION OF 2-D PHOTONIC CRYSTAL, B SUTHAR, AK NAGAR, A BHARGAVA, Journal of Non-Oxide Glasses Vol 2 (4), 199-202 (2010)
32. Tuning the localized mode in point defect chalcogenide photonic crystal, B Suthar, AK Nagar, A Bhargava, Chalcogenide Letters 6 (11), 623-627,9 (2009)
33. Theoretical band gap studies of 1-D photonic crystals, B Suthar, A Bhargava, AK Nagar
Proc. of International Conference on Advanced Materials and Composites, 701-705 2 (2007)
34. Self-focusing of a Gaussian laser beam in parabolic profile optical fiber having Kerr non-linearity
RK Khanna, AK Nagar, NISCAIR-CSIR, India 1 (2001)
35. Study of propagation of a Gaussian laser beam in parabolic index optical fiber having thermal nonlinearity, RK Khanna, AK Nagar, Indian Journal of Physics 1 (2001)
36. Self-Compression and Soliton Propagation of Short Gaussian Laser Pulses in Kerr Nonlinear Dielectric Fibers of Parabolic Refractive Index Profile, RK Khanna, RC Chouhan, AK Nagar Nonlinear Optics 29 (2-3), 135-156 (2002)

➤ **Other Achievements:** District Level Master Trainer (DLMT) in Elections