Dr. Gaurav Dar
Associate Professor (Physics)

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Date of Birth **:** 13/11/1970

Marital Status **:** Married

Education

- BSc, St. Stephen's college, Delhi (1991)
- MSc, IIT Bombay (1993)
- PhD, IIT Kanpur (2000), Thesis title : "Energy spectra and transfers in magnetohydrodynamic turbulence", Supervisor: Prof. Mahendra K Verma, Co-supervisor: Prof. V. Eswaran

Work Experience

1. Birla Institute of Technology and Sciences (BITS), Pilani
   - Joined as lecturer in 2002.
   - Promoted as Assistant Professor in 2005
   - Shifted to K K Birla Goa campus in July 2005
   - Promoted as Associate professor in 2010
2. Worked as a consultant / Editor with Ulearn Today & Magic Software between Oct. 2000 – June 2002. We developed interactive software & animations for school –level physics.

Research Interest

My interest lies in studying dynamics of nonlinear systems. My work has involved taking the route of computer simulations to understand the dynamics. More specifically, I am interested in the following :

Dynamics of biological neurons; Turbulence; Dynamo

Courses Taught

1.Computational Physics (Introductory course for Msc students)
2.Electromagnetic theory – II (2nd course of EMT for Msc students)
3.Statistical mechanics (Introductory course for MSc students)
4.Modern physics (covers relativity, introductory wave mechanics for Msc students)
5.Nonlinear dynamics (taught from Strogatz for all science & engg students)
6.Neural networks (taught from Zurada for all science & engg students)
7.Mechanics, oscillations and waves (taught from Kleppner & Frenchfor all science & engg students)
8.Physics - II (1st course in EMT for all science & engg students)

9. Structure and properties of matter (for all science & engg students)
10. Measurement technique - 1 (Lab course for all science and engg students)
11. Physics Lab - 1 (Lab course for all science and engg students)
12. Instrumental method of analysis (Lab course for MSc)

Research publications

Journals

1. G. Dar, M. K. Verma and V. Eswaran, *Sensitivity of Initial conditions on the global quantities in MHD turbulence*, Phys Plasmas, 5, 2528, 1998
2. G. Dar, M. K. Verma and V. Eswaran, *Energy transfer in two-dimensional magnetohydrodynamic turbulence: Formalism and numerical results*, Physica D, 157, 207, 2001
3. M. K. Verma, G. Dar and V. Eswaran, Comment on "*On two-dimensional magnetohydrodynamic turbulence*" [Phys. Plasmas, 8, 3282 (2001)], Phys. Plasmas, 9, 1484, 2002

Conferences

4. G. Dar and M.K.Verma, *Parallelization of spectral MHD Turbulence*, in Proceedings of Parallel Computing Applications in Science & Engineering, Ed. M. K. Verma, p. 61, IIT Kanpur, 1997
5. M. K. Verma and G. Dar, *Probing physics of magnetohydrodynamic turbulence using direct numerical simulations*, in the proceedings of Nonlinear dynamics and

Projects

1. Awarded seed grant by BITS Pilani for a 2-year project titled "Dynamics of neurons under external forcing by periodic currents" starting 2013.
2. Participated in the 'Pilot project' of MHRD to develop teaching aids for UG/PG level courses. As part of this course I and a team of students at BITS developed a set of ten interactive applets for teaching mechanics

Invited Presentations

1. Delivered lectures in workshops of Indian association of physics teachers (IAPT) in Goa in 2012 and 2013
2. Delivered seminar at the National Initative in Undergraduate Science (NIUS) Organized by the Homi Bhabha Center for Science Education (HBCSE) at TIFR, Mumbai in July 2007.
3. Gave an invited lecture at workshop for college & school teachers in Goa organized by the Indian Association of Physics Teachers (IAPT) in Nov 2008 and 2006
4. Presented an invited lecture at a Teacher Training Workshop at Pilani in 2005.
5. Gave a seminar on "Energy Transfer in 2-D MHD Turbulence" in 2000 at Institute of Plasma research at Ahmedabad, Physical Research Laboratory at Ahmedabad, Indian Instiute of Science at Bangalore, Institute of Astrophysics at Bangalore

Administrative positions held

1. Faculty in-charge, Practice School Division , 2005-2011
2. Faculty in-charge, Placement, 2006 – onwards
3. Leader - Task force, Alumni affairs under Mission 2012 BITS Pilani,
4. Convener - Department research committee (DRC) Physics Department, 2011-onwards

Membership of Committees

5. Member - Department faculty selection committee, 2011 - onwards
6. Member – Cross campus curriculum committee, Physics Department, 2011 - onwards
7. Member - Examination committee
8. Senate member