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Curriculum Vitae

Neena Goveas

Associate Professor

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Areas of Research Interest

Mean field approaches to thermodynamic properties of magnetic systems; Quantum antiferromagnets; Low dimensional magnetic systems
Development of Metadata based Information Processing Middleware for Wireless Sensor Networks
Merging in Multidimensional networks

General Information

Neena Goveas is with the [Department of Computer Science](#) at [BITS Pilani K K Birla Goa campus](#). Earlier she was with Department of Physics BITS Pilani, Pilani campus.

For her PhD thesis, she worked on “Mean field approaches to thermodynamic properties of magnetic systems” at IIT Bombay, advisor Prof. G. Mukhopadhyay. She worked on INDO-US sponsored project “Development and characterization of materials suitable for magneto-optic Devices” at A. C. R. E., I. I. T. Bombay. She worked as DST-Young Scientist Scheme Project entitled “Study of low dimensional magnetic systems” at IIT Guwahati.

Her main theme of research work is to study magnetic systems. Using various mean field and computational approaches to understand their properties. Recent research work is on Wireless Sensor Networks: Development of Metadata based Information Processing Middleware and security issues in Wireless Sensor Networks

She has been the Faculty In charge of **Academic Registration and Counseling Division**. She has used the ERP system to make the entire student academic activities online. This has resulted in the entire process becoming paperless and transparent.

As the In-charge of Mess affairs she had made the entire student mess and leave lifecycle online. This included online choice of mess, billing, application of leave, mess rebates etc.

Administrative responsibilities: Warden, Member of the Examination Monitoring and Coordination Committee, Mess affairs coordinator, Member of the DRC and DLSC CS &IS Dept

Personal

- **Name:** Neena Goveas
- **Date of Birth:** September 22, 1968
- **Nationality:** Indian
- **Sex:** Female
- **Marital Status:** Married
- **Address for Communication:**
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Areas of Research interest:

Computational approaches to Magnetic systems: Mean field approaches to thermodynamic properties of magnetic systems, Quantum antiferromagnets, Low dimensional magnetic systems

Wireless sensor networks: Development of Metadata based Information Processing Middleware for Wireless Sensor Networks

Multilayer networks: Merging and emerging properties.

PhD Students as Supervisor

In progress

- Jyotsana Kulkarni

Development of Metadata based Information Processing Middleware for Wireless Sensor Networks

- TSRK Prasad

M Tech Dissertation supervised

- Hemanth Rathore

Study of secure key distribution in wireless sensor network on a pipeline

M Tech Dissertation supervising

- Dipti Sengupta

Development of pervasive computing components

Professional Awards

- DST 2004 International travel grant award for attending INTERNATIONAL CONFERENCE ON MAGNETISM (ICM'94), Warsaw.
- ICTP grant for visiting the International Center for Theoretical Physics, Trieste, 1994.

Education

1990 – 1997	I. I. T. Bombay	Mumbai
Doctor of Philosophy (Physics)		
Thesis Title: Mean field approaches to thermodynamic properties of magnetic systems		
1988 - 1990	I. I. T. Bombay	Mumbai
M.Sc. (Physics)		
1985-1988	Bombay University	Mumbai
B. Sc. (Physics)		

Professional experience

2013- Associate Professor	BITS Pilani	K K Birla Goa Campus
2007 -2013 Assistant Professor Campus	BITS Pilani	K K Birla Goa
2003 -2007 Lecturer	BITS Pilani	Pilani and Goa Campus
2001 –2002 Scientist	Physics Department I. I. T. Guwahati	Guwahati
DST-Young Scientist Scheme Project entitled Study of low dimensional magnetic systems		
1995 - 1996 Research Associate	A. C. R. E., I. I. T. Bombay	Mumbai
INDO-US sponsored project Development and characterization of materials suitable for magneto-optic Devices		

Administrative Experience

Faculty In-Charge, Academic Registration and Counseling	2009-
Warden, Residential, CH5	2006-
Mess Affairs In-charge	2007-2009
Nucleus member, ARC	2004-
Nucleus member, Instruction Division	2004-2009

Assignments Handled

Faculty In-charge for implementation of ERP for student registration, academic records etc.

Mess In-charge for implementation of online system for student mess selection, billing, leave applications.

Faculty In-charge for Medals committee for Goa Campus

Faculty In-charge for Convocation committee for Degree distribution

Member of various committees: Member of the Examination Monitoring and Coordination Committee, Member of the DRC and DLSC CS &IS De

Timetable committee, Higher Degree Counseling committee

Projects as PI **DST-Young Scientist Scheme Project** entitled **Study of low dimensional magnetic systems**, DST, 2 Years, 5 Lakhs

Projects as CO-PI **Design and Development of Condition based Monitoring of Pipelines using Wireless Sensor Networks**", GAIL India Ltd, 2 years (Sept 2012), 1 Lakhs.

Projects Associated with INDO-US sponsored project **Development and characterization of materials suitable for magneto-optic Devices**

Teaching experience **BITS Pilani (Pilani and K K Birla Goa Campus)**

IS C462	NETWORK PROGRAMMING
BITS ZC411	OBJECT ORIENTED PROGRAMMING
CS C313/IS C313	OBJECT ORIENTED PROGRAMMING AND DESIGN
SS G514	OBJECT ORIENTED ANALYSIS AND DESIGN
CS C372 / IS C362	OPERATING SYSTEMS
BITS C342	OBJECT ORIENTED PROGRAMMING
MATH C222	DISCRETE STRUCTURES FOR COMPUTER SCIENCE
CS C341/IS C361	DATA STRUCTURES AND ALGORITHMS
CS C471/ IS C471	COMPUTER GRAPHICS
IS C351	COMPUTER ORGANIZATION AND ARCHITECTURE
TA C162	COMPUTER PROGRAMMING I
TA C252	COMPUTER PROGRAMMING II
ES C263	MICROPROCESSOR PROGRAMMING (Lab)
BITS G620	PROFESSIONAL PRACTICE I
BITS G540	RESEARCH PRACTICE
TA C111	ENG GRAPHICS (Lab)
TA C211	MEASUREMENT TECHNIQUES I
EEE G627	NETWORKED EMBEDDED APPLICATIONS
PHY C322	SOLID STATE PHYSICS
PHY C131	PHYSICS I
PHY C132	PHYSICS II
PHY C391	IMA
Project type	COMPUTER PROJECTS, STUDY ORIENTED PROJECTS, LAB ORIENTED PROJECTS, INFORMATION SYSTEMS PROJECT, SPECIAL PROJECTS
BITS C382	READING COURSE
PHY C232	COMPUTATIONAL PHYSICS

Other experience **Teaching assistant**, during Ph.D. at I.I.T. Bombay

1 st Year B.Tech. semesters.	Physics I Lab	Spring '91, Spring '92
1 st Year B.Tech.	Physics I (Mechanics)	Autumn '91 semester.
2 nd Year B. Tech.	Solid state Physics	Spring '93 semester.
1 st Year M.Sc.	Computer programming and utilization	Autumn '92, Autumn '93 and Autumn '94 semesters.
3 rd Year B. Tech.	Numerical Programming	Spring '94 and Spring '95 semesters.
Preparatory course	Physics (Mechanics)	Autumn '96 semester.

Semesterwise breakup

Year	Semester I	Semester II
2013-14	IS C462, CS C313/IS C313/CS F213, BITS C382	
2012-13	CS C313/IS C313/CS F213/IS F213	BITS C342, BITS ZC411
2011-12	IS C462, CS C313/IS C313	EEE G627, IS C462
2010-11	CS C313/IS C313, BITS ZC411	SS G514, BITS ZC411
2009-10	CS C341/ISC361, CS C471/ IS C471	MATH C222, SS G514
2008-09	CS C372 / IS C362, BITS C342	MATH C222, TA C162 (Summer: BITS C331)
2007-08	CS C471/ IS C471, TA C252	BITS C342, CS C471/ IS C471
2006-07	CS C372 / IS C362, IS C351, TA C252	TA C162, ES C263, IS C362
2005-06	TA C252, TA C211, TA C162	TA C162, TA C111
2004-05	PHY C131	TA C162
2003-04	PHY C131, TA C211, PHY C232	PHY C132, PHY C322
2002-03		PHY C132, PHY C391

Research

1. During Ph.D. at I. I. T. Bombay:

MEAN FIELD APPROACHES TO THERMODYNAMIC PROPERTIES OF MAGNETIC SYSTEMS

Studied the magnetization of complex systems (Garnets) using a mean field approach. The magnetization functions are obtained by solving computationally a set of nonlinear transcendental equations.

These programmes were implemented in C and FORTRAN

2. QUANTUM ANTIFERROMAGNETS

In this project we have studied Quantum Antiferromagnets using DMRG method. This technique involved very large-scale computational methods in Linear Algebra. The work involved solving a large set of simultaneous equations and Matrix diagonalization of very large sparse matrices (of the order of 10^6). The programmes were implemented in C on HP-K9000 multiCPU server at I. I. T. Guwahati.

3. LOW DIMENSIONAL MAGNETIC SYSTEMS

We have studied a partially frustrated $S = 1/2$ spin system that extrapolates between a square lattice characterized by the long range Neel order and a triangular lattice showing the long range spiral ordered phase. The lattice is a spatially anisotropic triangular lattice in which one of the bonds is of a different strength from the other two.

These models describe the magnetic properties of layered organic superconductors. We have used exact diagonalization techniques. We have calculated the sublattice magnetization and susceptibility for the region with Neel order, spiral order and the region in between. We are studying the region in between the two ordered phases for the possible existence of a disordered phase.

The number of eigenstates increases as $2N$ with. Even for very small values of N , there is no stable method to calculate directly all the eigenvalues of the Hamiltonian. The problems to be handled are memory space requirement, computer time and degeneracy of states. These problems have been reduced by an intensive use of space and spin symmetries. We have used the Lanczos method to diagonalise the Hamiltonian in the subspace associated with each IR. We have succeeded in studying systems upto $N = 30$.

This work was done under Department of Science and Technology (India) project in the Young Scientist Scheme.

Current Research

Development of Metadata based Information Processing Middleware for Wireless Sensor Networks

The proposed research aims at:

- Developing an information processing middleware to utilize metadata information for homogeneous WSN with long running periodic queries.
 - Enhance the middleware by incorporating efficient query planning for event triggered queries.
 - Optimize the middleware functionality incorporating energy efficiency.
- Generalize the middleware for heterogeneous nodes with multiple operating systems

Current Software Development

- Security gate software: This will include the data collection and analysis of students and visitors
- VGH room booking: This will include reserving, bookings, billing etc.
- Test seating in Class room: This will include allocation of students, invigilators and output required for notice boards.