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CSIR-4PI (erstwhile C-MMACS) ACADEMIC PROGRAMME

In keeping with its objective of developing skill and expertise in Mathematical Modelling and Computer Simulation in the country, CSIR-4PI (erstwhile C-MMACS) maintains an active academic programme. The activities span the entire spectrum from Ph D guidance to undergraduate/postgraduate student projects to specialized courses. The recently introduced Student Programme for Advancement of Research Knowledge (SPARK) is intended to provide a unique opportunity to bright and motivated students of reputed Universities to carry out their major project/thesis work and advance their research knowledge in mathematical modelling and simulation of complex systems. Students and professionals from a wide spectrum of organizations including industries across the country have been benefiting from our various academic programmes over the years. CSIR-4PI (erstwhile C-MMACS) is very actively engaged with the AcSIR (Academy of Scientific and Innovative Research) PhD program in Mathematical and Information Science.

Inside

- *Ph D Programme*
- *Thesis/Project by M. Tech/BE/MCA students*
- *Faculty Participation*

Ph D Programme

Anil Earnest

Sunilkumar T C, (AcSIR), Geodynamics of Plate-Boundary Zones
Silpa K, (AcSIR), Crustal Deformation and Earthquake Cycles

Goswami P

Gouda K C, Multi-scale Modelling and Forecasting of Monsoon Weather and Processes
Mohapatra G N, Impact of Local Climate Variability and Anthropogenic Processes in Extreme Weather Events over India
Sumana Sarkar, Multisector Application of Seasonal Forecast: Crop yield, Vector-Borne Diseases and High Impact Weather Events over India
Kantha Rao, Multi-scale Modelling and Analysis of Surface and Soil processes over the Indian Region.
Shiv Narayan Nisad, Analysis and Modeling of Sustainability over India under Different Scenarios of Climate Change and Socio-Economic Conditions
Shaktidhar Nayak, (AcSIR), Development and Evaluation of a Model Configuration for Local Climate Projection over India
Eswari V, (GSI), Analysis of Impact of Climate Change on Wind Regimes and Implications for Wind Energy potential over the Monsoon Region.

Parvez I A

Sushant Shekhar, (AcSIR), Seismic Wave Propagation in Non Homogeneous Anisotropic Incompressible Media.
Ramiz Raja Mir, (AcSIR), Evolution of Crustal and Mantle Structure in Kashmir Himalaya.

Parvez I A (Co-guide)

Parul Trivedi, (Saurashtra University), Source Modelling and Seismic Hazard Study in Kuchcha Region

Patra G K

Siddhartha Saha, Security in a Distributed Environment

Patra G K and Sarda N L (IIT Bombay)
Ashapurna Marndi, (AcSIR), Scientific Data Analysis and Data Intensive Research

Sangeeta Iyer K and ***Patra G K (Co-guide*)**

Santhana Lakshmi S**,** Design of Cryptographic Protocols using Computational Intelligence Techniques
Supriya M, Trust Building in Distributed Storage using Cryptography.

Prathap G and Pradhan S C (IIT KGP)

Senthilkumar V, Small scale effect on Structural Behaviour of Carbon Nanotubes

Rajendran K

Ipsita Putatunda, (AcSIR), Methods of Physical Assimilation for Short Range Numerical Weather Prediction.
Jayasankar C B (AcSIR), Climate Change Modeling Studies

Rajendran K (Co-guide)

Kulkarni Shashikant (IIT Bombay), Downscaling over Monsoon Region

Ramamohan T R and Srinivas S

Anant Kant Shukla, Homotopy Analysis Method for Nonlinear Differential Equations with a Non-Homogeneous term
A Subramanyam Reddy, Heat and Mass Transfer Effects on a Viscous Fluid in Flow Regions with Expanding or Contracting Walls

Ramesh K V

Alfred Johny, Simulation of Indian Summer Monsoon using CMIP5 Climate Simulations
Safeer K B, Evaluation of Upper Ocean Variability Simulated by IPCC Climate Simulations
Edwin Raj E, (UPASI TRF TRI) Climate Impact Assessment on Tea Production over South India

Sajani Surendran (Co-guide)

Nithin Patil (IIT Bombay), Aerosol Radiative Forcing and Impact on Climate

Sridevi Jade

Shrungeshwar T S, Research Topic: Active deformation and water vapor studies in Indian subcontinent

Sridevi Jade and Ashok Kumar

Prakash Burman (Tezpur Univeristy), Estimation of Precipitable Water Vapor and Crustal deformation in Northeast India

Sridevi Jade and Malay Mukul (IIT Bombay)

Kutubuddin Ansari (IIT Bombay), Modelling of Global Positioning System (GPS) based surface defromation using Dislocations
Ashok Shaw (IIT Bombay), Geological and Contemporary deformation in the internal thrust sheets of the highest Darjeeling Sikkim Himalayas

Ravi Babu (VIT) and ***Tejpal Singh (Co-guide)***
Nisha (VIT), Remote sensing/GIS applications in mineral spectra identification

Vijayan M S M

Shimna K, (AcSIR), seismo-ionospheric coupling and upper atmospheric perturbations induced by acoustic gravity waves

Vijayan M S M and Senthilkumar V (Co-guide)

Lalit Kumar, (AcSIR), Finite Element Modelling of deformation of the Indian plate

Ashok Kumar and ***Vijayan M S M (Co-Guide)***

Jagat Dwipendra Ray, Space based geodetic study on active tectonics and seasonal perturbations in interseismic deformation of North-East India

Thesis/Project by BE/M. Tech/MCA students

Anilkumar V

Analysis of correlation DDOS attacks on wired networks, Arnika Tripathi (M Tech), NIT Surathkal, July, 2013
Correlated low-rate attacks on router buffers, Pavithra J (M Tech), Dayananda Sagar College of Engineering, Bangalore, August 2013

Mahapatra G N

Development of software for image processing using satellite data, Mohan, Thimeya, Prajwal, Bhatrat, (BE), VTU Karnataka, June 2013.
Software for spatio-temporal climate data analysis using remote sensing data, S Redappa (MCA), Dayananada Sagar College, Bangalore, July 2013

Parvez I A

Seismic data analysis based on GUI and generic mapping tools, Reena Arya, Devi Ahilya Vishwavidyalaya, Indore

Patra G K

Design of word based stream cipher using neural cryptography, Nandini G, JNN College of Engineering, Shimoga, September 2013
Analysis of public key cryptography based on neural cryptography and its application, Chitra R, SJBIT, Bangalore, August 2013
Enhancing trust of cloud storage services using zero knowledge protocols, Asha R, Athiya Shereen, Ayesha Noorain and Ramendra Kumar, KSN Institute of Technology, May 2013
Cloud security assurance, Tejas Rao, NIT Surathkal, July 2013

Ramesh K V

Modelling the impact of climate change on available solar electricity resource potential, Aswin V S, IIITMK, Thiruvanathapuram
Impact modelling of climate change on hydroelectricity production, Revathy Rajakumaran, VIT, Vellore.
Understanding changing trends in global mean temperature, Pravat Kumar Nayak
Simulation of relationship between water discharge rate and instantaneous velocity, Suraj K, Chandni C V, Vidhulakshmi K U, IIITMK, Thiruvanathapuram

Rakesh V

Impact of satellite observed sea surface temperature on forecasting of tropical cyclones over the Indian Ocean, Shruti Jha, Devi Ahilya University, Indore
High resolution numerical simulation of high impact weather systems, Anand M, Cambridge Institute of Technology, VTU, Bangalore

Senthilkumar V

Symbolic computation for carbon nanostructures using MAXIMA, Rekha Penmatsa (M Tech), MVJ College of Engineering, Bangalore
Buckling behavior of carbon nanotubes using molecular simulation, Ashutosh Agarwal (M Tech), School of Nanoscience and Technology, NIT Calicut
Vibration analysis of 2-noded and 3-noded bar with mesh distortion using python programming, M Sreeja (M Sc), IIITM, Kerala
Wave propagation of nanorods/nanotubes, Mohan Sriram Nayaka (M Sc), IIITM, Kerala
Stress analysis of 2-noded and 3-noded bar with mesh distortion using python programming Nicy Varghese (M Sc), IIITM, Kerala
Element distortion of 8-noded, 9-noded, 16-noded finite elements using ADINA, V Lingesh (BE), Kumaraguru College of Technology, Coimbatore
Dynamic analysis of flat plates, Pranav Sridhar (B.E) Amrita Vishwa Vidyapeetham, Bangalore

Tejpal Singh

Digital elevation models, Ateev Chopra (BTech), VIT University, Chennai,

Vijayan M S M

Software to calculate ionospheric total electron content using GPS, Gloria Varghese, IIITM-Kerala
Geospatial data mining: Database in open platform, Rajeswaran S, Adhiyaman College of Engineering, Hosur.
GPS based estimation of co-seismic crustal deformation due to 11th April, 2012 Indian ocean strike-slip earthquakes, Chandramouli A R., GokulmK, Mangala Surya S S and Sivasanari T, Bharathidasan University, Trichy.

Faculty Participation

Academy of Scientific and Innovative Research

Anil Earnest, Earthquake and Volcano Deformation, January 2014

Parvez I A, Research Methodology, January 2014

Patra G K, High Performance Scientific Computing, January 2014

Ramamohan, T R, Introduction to Non-linear Dynamics, January 2014

Ramesh K V, High Performance Computing, August 2013

Senthilkumar V, Advanced Numerical Techniques**,** August 2013

Vijayan M S M, GNSS Remote sensing for Geodesy, August 2013

Workshop on Inverse Problems and Applications (With Special Emphasis on High Dimensional Data Assimilation), 06 - 10 May 2013

Gaur V K

06/05/2013: Modelling Uncertainty: Random Walk and the Binomial distribution; Poisson and Gaussian distributions
Matrices: Characteristic Equation, Eigenvalues and invariability of a matrix;

07/05/2013: Vector Spaces and subspaces; Matrix inverses
Formulating Inverse problems; well posed problems and notions of existence, uniqueness, stability and regularization
Over, under and Mixed determined Inverse problems. Quality of solutions and experiment design Bayes Inversion and Kalman Filter

09/05/2013: Kalman filter of higher orders, Adjoint methods, 4D Var Data Assimilation

Indira N K

06/05/2013: Rapid review of probability theory; Marginal, Joint and conditional probabilities; notions of independence. Bayes Theorem and applications

Swathi P S

06/05/2013: Numerical problems and Hands on session

07/05/2013: Numerical Problems and Hands on session

09/05/2013: Kalman filter of higher orders, Adjoint methods, 4D Var Data Assimilation
Numerical Problems and Hands on session

10/05/2013: Carbon Flux estimation
Numerical Problems and Hands on session

Thangavelu R P

06/05/2013 Numerical problems and Hands on session

ICTP Summer School, INCOIS, Hyderabad, 5-13, August 2013.

Swathi P S, Fundamentals of Ocean Climate Modelling at Global and Regional Modelling