International Conference on Mathematics and Applications
ICMA 2024
January 10-12, 2024

Report

The International Conference on Mathematics and Applications was organized by Department of Mathematics in collaboration with IQAC, Mata Sundri College for Women (University of Delhi) from January 10-12, 2024. The primary objective of the conference was to create a dynamic and stimulating environment that fosters interaction and in-depth discussions about Mathematics and its applications. The inaugural programme of the International Conference was held on January 10, 2024 at Mata Sundri College for Women (University of Delhi). The principal, Prof. Harpreet Kaur, welcomed all the delegates and participants. She emphasised on the need of such conferences and the crucial role played by Mathematical concepts and research in diverse areas of everyday life. Chancellor Dr. Priyaranjan Trivedi , President and Plenipotentiary, Confederation of Indian Universities was the chief guest of the inaugural programme. Prof. Ali Baklouti, Faculty of Sciences of Sfax, Tunisia and Dr. Stefano Innamorati, University of L'Aquilla, Italy were the guests of honour of the Programme.

During the three days of Conference programme, 1 keynote address, 9 plenary talks and 9 invited talks were held in eight sessions. 61 paper presentations were made in 10 sessions – 5 parallel sessions on January 10 and 5 parallel sessions on January 11. The detailed report of three days is as follows:

Day 1: January 10, 2024

In Session I, Prof. R.K. Mohanty, South Asian University, Delhi presented a Plenary talk entitled "On the Application of 3-stage Block AGE Iteration Method for the Solution of 2D Helmholtz Equation using Sixth Order Compact Approximation" followed by an invited talk by Dr. Pranav Dass, Shyam Lal College, University of Delhi. Dr. Pranav Dass discussed about recent advances in data science. Session I was chaired by Prof. V. Ambedhkar, Department of Mathematics, University of Delhi. In session II, The Keynote talk was delivered by Prof. Ali Baklouti, Faculty of Sciences of Sfax, Tunisia. In his talk entitled 'On Polynomial Conjectures of Nilpotent Lie Groups Unitary Representations', Prof. Baklouti presented an overview of some history of the conjectures and some restrictive cases. Once restricted to codimension one, normal subgroups of a connected and simply connected nilpotent Lie group of Lie algebra, he discussed the crucial role played by the study of the geometry and the saturation of coadjoint

orbits in the proofs. Session II was chaired by Prof. Ajay Kumar, Department of Mathematics, University of Delhi. In Session III, a plenary talk by Prof. Siegfried Echterhoff, University of Münster, Germany, and an invited talk by Dr. Ved Prakash Gupta, JNU, Delhi was given. The session was chaired by Prof. Ali Baklouti, Faculty of Sciences of Sfax, Tunisia. Five parallel sessions of paper presentations were held with 37 paper presentations by participants and delegates. One best paper presentation award was given in each parallel session.

Day 2 : January 11, 2024

In Session I, a plenary talk on "A Spectral Dichotomy for Commuting m-Isometries with Negative Core Operator" was given by Prof. Sameer Chavan, IIT Kanpur and an invited talk On "Group of Automorphisms of the Unit Ball in a Hilbert Space" was given by
 Dr. Mukund Madhav Mishra, Hansraj College, University of Delhi. The session was chaired by Dr. S.K. Pal, DRDO, Delhi. In session II, two plenary talks by Dr. S.K.Pal, DRDO, Delhi and Prof. Mani Mehra, IIT, Delhi and an invited talk by Dr. Indivar Gupta, DRDO, Delhi was delivered and the session was chaired by Dr. Stefano Innamorati, University of L'Aquilla, Italy. The talks encompassed cryptography and machine learning viz., Long-Term Cryptographic Security, Overview of Post Quantum Cryptography and Machine Learning of Fractional Differential Equations. In session III, a plenary talk by Dr. Stefano Innamorati, University of L'Aquilla, entitled "Discovering Doily in the Projective Plane of Order Five"
 was delivered followed by two invited talks by Dr. Fulvio Zuanni, University of L'Aquilla and Prof. Siddhartha Sarkar, IISER Bhopal. The session was chaired by Prof. B.K. Dass, Department of Mathematics, University of Delhi. Five parallel sessions of paper presentations were held with 24 paper presentations by participants and delegates. One best paper presentation award was given in each parallel session.

Day 3 : January 12, 2024

In session I, three plenary talks by Prof. Manish K. Gupta, DAIICT, Gujrat, Prof. B.V. Rathish Kumar, IIT Kanpur and Prof. Khalil Ahmad, JMI, delhi were delivered on Coding Theory for DNA Data Storage, Convergence Analysis of Deep Neural Network for Psi-Omega Form of NS Equations and Applications and Applications for Wavelets in Signal and Image Processing respectively. The session was chaired by Prof. P.K. Sahoo, BITS, Pilani, Hyderabad. In session II, three invited talks were delivered by Prof. P.K. Sahoo, BITS, Pilani, Hyderabad, Dr. Vivek Kumar Agarwal, Delhi Technological University, Delhi and Dr. Sumit Nagpal, Department of Mathematics, University of Delhi on Wormhole Geometry, Perturbed Problems on a Graph

Domain and Univalent Harmonic Mappings respectively. The session was chaired by Prof. Sameer Chavan, IIT, Kanpur.

The conference concluded with the valedictory programme. Prof. Haneet Gandhi, Dean Admissions, University of Delhi was the chief guest. The best paper presentation certificates were given followed by certificate of paper presentation/ participation to the participants and delegates.

The distinguished speakers from various eminent institutions presented and discussed their ideas in diverse fields of Pure and Applied Mathematics. The response to the Conference has been extremely good with participation from renowned institutions from all over India including Central and State Univerties/ IIT's/ NIT's/ BITS. Around 130 delegates participated in the International Conference from different states of India. 61 paper presentations and few poster presentations were presented in 10 sessions with 5 parallel paper presentations on 10 and 11 January 2024. To encourage young research scholars, best paper presentation award was given in each session. The participants actively participated in the conference.

By providing a space for researchers and experts to share their insights, the conference contributed to the expansion of knowledge and served as an exceptional platform for participants to get familiar with the latest methodologies, techniques, and diverse applications of Mathematics in solving real-world problems. Additionally, the conference fostered collaboration among participants, potentially leading to future research collaborations and partnerships. The conference also promoted the interdisciplinary nature of Mathematics by highlighting its relevance and applications in various fields. We are sure that all the participants and delegates would have benefitted with enlightening discussions, new ideas and interactions at the conference.