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Date: 17/02/2025

Conference Report

2nd international conference on recent trends in mathematics (ICRTM 2025)

Organized by: Department of Mathematics,
Hansraj college, Delhi university

Date of the Event: 7th and 8th February 2025

Duration/Event Timing: 9AM to 5PM

Venue of the Event: Library auditorium

Name of Convener: Prof. (Dr.) Arvind

Prof. (Dr.) Jyoti Bhola

Name of Coordinators: Dr. Mukund Madhav Mishra

Mr. Brij Mohan

Organizing secretary: Dr. Manisha and Dr. Ashima

Event description:

The **2nd International Conference on Recent Trends in Mathematics (ICRTM 2025)**, organized by the **Department of Mathematics, Hansraj College**, in association with **DRDO** and **ANRF(DST)** was a monumental event that brought together mathematicians, researchers, and professors from across the country. This gathering provided a platform for experts from renowned universities to present their research and discuss the latest developments in the field of mathematics.

The event commenced with a grand **Lamp Lighting Ceremony**, symbolizing the illumination of knowledge. The ceremony was graced by the esteemed **Prof. (Dr.) Rama**, the Principal of Hansraj College, along with the honoured **Chief Guest Shri Maiya Din, director, directorate of finance and materials management (DFMM) at DRDO**. The faculty of the Department of Mathematics participated in this ceremonial moment, marking the official start of the conference.

Dr. Rama delivered the inaugural address, sharing her insightful experiences with mathematics and emphasizing the crucial role it plays in modern-day advancements. She highlighted the importance of nurturing mathematical thought in academia and its real-world applications. The **Chief Guest** followed with a thought-provoking address, expressing excitement about the event and the contributions of the diverse group of participants. Her insightful words set the tone for an engaging session ahead.

Speakers in the session:

The conference proceeded with a series of **presentations**, each contributing invaluable knowledge to the mathematical community.

1. **Dr. SK Pal (DRDO, Delhi)** opened the series with his presentation on '**Ensuring Long-Term Cryptographic Security**', co-chaired by **Dr. Gaurav Kumar (DRDO, Delhi)**. Dr.



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Pal's research shed light on the vital role of cryptographic security in safeguarding data and ensuring long-term protection against evolving cyber threats.

2. **Prof. Om Prakash (IIT Patna, Bihar)** followed with his presentation titled '**A Study on LCD and ACD Codes over a Finite Non-Unital Ring**', co-chaired by **Dr. Dharmendra Yadav (M.J.P.R.U, Bareilly)**. His work delved into the application of coding theory to enhance communication systems, using mathematical structures over finite rings to improve data transmission.
3. **Dr. Puneet Rana (Wenzhou Kean University, China)** presented on '**Role of Artificial Intelligence in Engineering Applications**', co-chaired by **Dr Chaman Singh (University of Delhi)**. Dr. Rana's research explored the intersection of artificial intelligence and engineering, illustrating how AI is transforming engineering practices and leading to more efficient systems.
4. **Dr. Shalini Gupta (Himachal Pradesh University, Shimla)** concluded the paper presentations with her research on '**Advanced Image Encryption Through Innovative Chaotic Maps**', co-chaired by **Dr. Ambrish Awasthi (DRDO)**. Dr. Gupta's innovative work on chaotic maps demonstrated how mathematical techniques can enhance the security of image data in digital communication systems.
5. **Dr. Sartaj Ul Hasan (IIT Jammu)** shared his work on '**Bivariate Local Permutation Polynomials, Their Companions, and Related Enumeration Results**', co-chaired by **Prof. Pankaj Garg (University of Delhi)**. His talk provided deep insights into permutation polynomials and their combinatorial properties, an essential topic in algebra and number theory.

At the conclusion of each session, the **faculty of the Department of Mathematics** honored the guest speakers with **certificates of appreciation** and **gifts** as a token of gratitude for their valuable contributions to the conference. These symbolic gestures acknowledged the presenters' efforts in advancing mathematical research.

Online and Offline Presentations:

Following the paper presentations, the conference transitioned into a dynamic and interactive phase with both online and offline sessions. The online presentations were organized into seven groups, while the offline sessions were divided into three groups, collectively involving over 100 participants from across the country. Researchers presented their work, offering fresh perspectives and sparking insightful discussions on a broad spectrum of mathematical topics. These sessions provided a



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valuable platform for emerging researchers to showcase their findings, engage with leading experts, and contribute to the advancement of knowledge in the field.

As the first day of the conference concluded, it was evident that the event had successfully brought together a diverse group of mathematicians and scholars. The rich exchange of ideas, research, and insights demonstrated the growing impact of mathematics across various disciplines.

Second day

The second day of the **2nd International Conference on Recent Trends in Mathematics (ICRTM)** continued the momentum of insightful presentations and vibrant discussions. Day 2 provided another remarkable opportunity for scholars and researchers to delve into contemporary mathematical research, foster academic exchanges, and showcase their work to a global audience.

Speakers in Sessions:

Day 2 commenced with a series of insightful presentations delivered by distinguished speakers:

1. **Dr. Sachin Kumar (University of Delhi, Delhi)** presented his work on 'Dynamical Systems', co-chaired by **Prof. Mukesh Kumar (Graphic Era University, Dehradun)**. Dr. Kumar's talk focused on the study of dynamical systems, offering mathematical models that describe real-world phenomena such as population growth, fluid dynamics, and chaos theory.
2. **Prof. Ajay Kumar (University of Delhi, Delhi)** presented his work on 'Operator Spaces and Their Tensor Products', co-chaired by **Prof. Pragati Gautam (University of Delhi, Delhi)**. His talk explored the advanced theory of operator spaces, focusing on the mathematical intricacies of their tensor products, which have deep implications in functional analysis and quantum computing.
3. **Prof. Ayub Khan (JMI, Delhi)** followed with his presentation on 'Adaptive Control for Hybrid Function Projective Synchronization in Hyperchaotic Financial Systems and Competitive Dynamics of Herbivore Species Networks', co-chaired by **Prof. Manoj Kumar Sahni (Gujarat)**. Prof. Khan's work presented a fascinating application of mathematical modelling in chaotic systems, from financial markets to ecological networks, demonstrating the versatility of mathematics in both natural and artificial systems.
4. **Prof. R.K. Sharma (IIT Delhi, Delhi)** delivered a highly engaging presentation on 'Quantum Cryptography', co-chaired by **Mr. Sunil Kumar (DRDO)**. His talk offered a comprehensive overview of the principles of quantum cryptography, its significance in securing communications, and its future prospects in the era of quantum computing.
5. **Prof. Shanta Laishram (ISI, Delhi)** presented on 'On Squares in Arithmetic Progression', co-chaired by **Dr. Pankaj Sharma (Pondicherry University)**. His research



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explored the intriguing number-theoretic problem of finding squares within arithmetic progressions, a topic with deep connections to algebraic and analytic number theory.

6. **Prof. Mukesh Kumar Sharma (CCS University, Meerut)** presented his research on the 'Exploration of Fuzzy Logic and Its Applications', co-chaired by **Dr. Randheer Singh (University of Delhi)**. Prof. Sharma's presentation provided insights into fuzzy logic systems, explaining their role in decision-making processes and their growing applications in engineering and artificial intelligence.

Each session concluded with the **faculty of the Department of Mathematics** honouring the guest speakers with **certificates of appreciation** and **gifts** to acknowledge their prestigious contributions to the conference. These tokens of gratitude highlighted the collective commitment to advancing the field of mathematics.

Online and Offline Presentations:

Following the paper presentations, the conference proceeded with both online and offline sessions. The online presentations were organized into four distinct groups, while the offline sessions were divided into three groups, collectively comprising over 50 participants. These sessions provided an invaluable platform for sharing research, significantly enriching the conference's content. The interactive nature of these sessions fostered a collaborative environment, encouraging lively discussions on a wide array of mathematical topics and promoting the exchange of innovative ideas.

Valedictory Session:

The event culminated in a **Valedictory Session**, where **Prof. Pankaj Sharma (Pondicherry University)** shared his inspiring thoughts on the role of mathematics as an instrument for development. He emphasized the importance of mathematics in driving progress across various fields, including technology, economics, and even social change. His words resonated with the audience, underscoring the essential role of mathematical thinking in shaping a better future.

As part of the closing ceremony, all **volunteers and faculty** involved in the event were honoured with applause from the audience for their hard work and dedication in ensuring the smooth execution of the conference.

Cultural Program:

To conclude the conference on a high note, a **cultural program** was organized, showcasing the vibrant traditions of Hansraj College. The students of Hansraj College performed traditional **dance** and **sang classical ragas**, representing the rich cultural heritage of India. The cultural performances added an extra layer of joy and festivity to the proceedings, bringing the academic event to a memorable and celebratory close.

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Conclusion:

The 2nd International Conference on Recent Trends in Mathematics was a resounding success. It not only provided a platform for the exchange of cutting-edge research but also fostered connections between mathematicians from diverse backgrounds. The contributions of the presenters, the collaborative spirit of the attendees, and the seamless organization of the event ensured its success.

Arvind

Prof (Dr)Arvind

Convener

ICRTM 2025



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