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OF TECHNOLOGY**
(INDIAN SCHOOL OF MINES)
DHANBAD

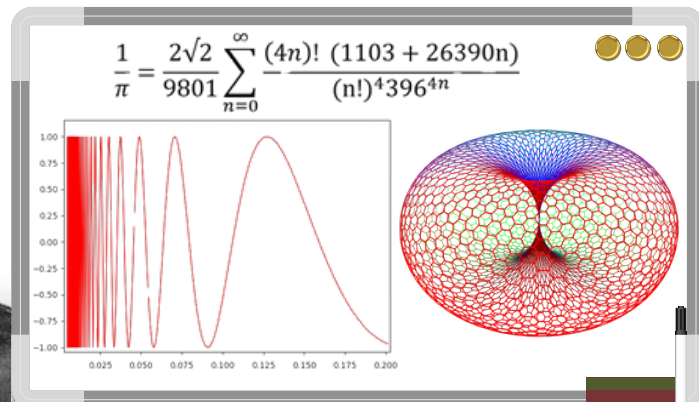
Legacy that inspires the future

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GANANAM

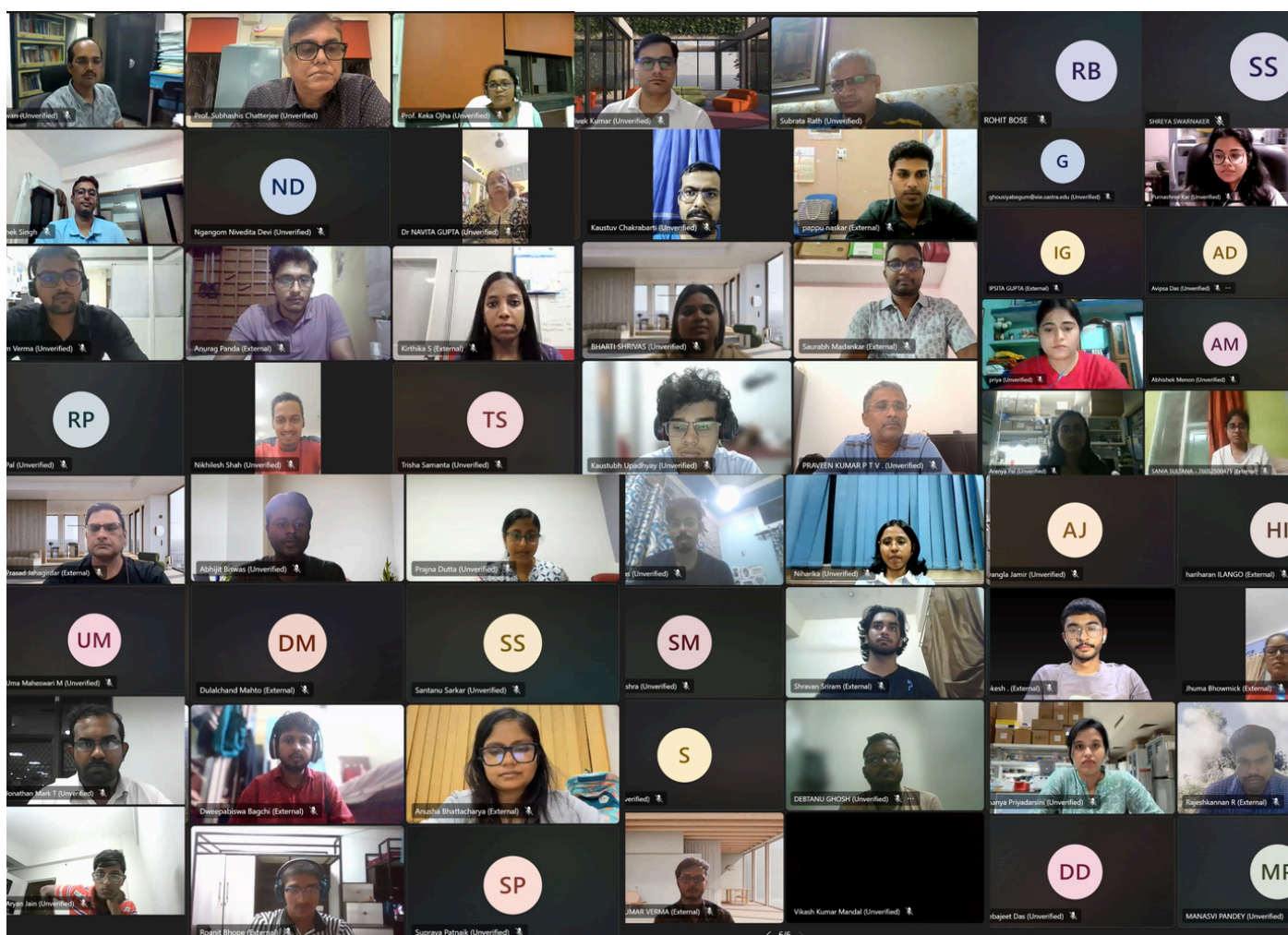
*A Monthly Newsletter of
Department of Mathematics and Computing*



EVENTS

Prof. S. Chatterjee and **Prof. A. K. Singh** organized a **Short Term Course** on "Introduction to Generative AI and its Application: A Step Forward to Artificial Intelligence", from 27 October - 1 November 2025.

The program aimed to cultivate a deep interest in Generative AI and demonstrate how it can be leveraged both for effective business management and for advancing research and project development.



The program included a balanced mix of theoretical sessions, practical hands-on exercises, guiding participants through the process of developing small projects using Generative AI. This helped the participants to gain experiences on how to develop real-life projects as well as how to use Generative AI for practical applications.

PUBLICATIONS

- G. K. Verma, Nupur and **A. K. Singh**, Code Size Constraints in b-symbol Read Channels: A Bound Analysis. *IEEE Transactions on Information Theory*, 2025. (Accepted)
- P. Kumar, Ankur and **A. K. Singh**. Lee Metric Codes Over Symbol-Pair Reed Channels. *Discrete Mathematics*, 349, 3, 114841, 2025. (DOI: 10.1016/j.disc.2025.114841)
- C. Nazaroglu, B. V. Pandey, and **A. Singh**. Quasimodularity and limiting behavior of generalized MacMahon-type q-series. *Advances in Mathematics*, 482, 110565, 2025. (Accepted)
- A. Baranwal, P. Samal, **A. Jayswal** and Manuel Arana-Jimenez. Saddle point criteria for robust isoperimetric constrained variational control problems. *Annals of Operations Research*, October, 2025. (DOI: 10.1007/s10479-025-06876-2)
- P. Samal, **A. Jayswal** and Jen-Chih Yao. Well-posedness of multidimensional semi-infinite variational inequalities with applications. *Applicable Analysis*, October 2025. (DOI: 10.1080/00036811.2025.2567927)
- S. Bansal and **P. K. Kewat**. An infinite family of additive codes over the ring $\frac{\mathbb{F}_2[u]}{\langle u^4 \rangle}$ with Lee distance 8. *IEEE ISIT*, 1-6, 2025. (Accepted)
- **P. K. Kewat** and V. Tiwari. Construction of good CSS quantum codes and QSCs using Whiteman's generalized cyclotomy of order two. *Quantum Information Processing*, 24, 344, 2025. (DOI: 10.1007/s11128-025-04961-w)
- M. K. Bose, U. Parampalli and **A. K. Singh**. On some p-ary few-weight linear codes by the help of Weil sums, *IWSDA*, Melbourne, 2025. (Accepted)
- S. Bansal and **P. K. Kewat**. Binary polycyclic codes associated with $x^{2^{\eta+1}} + x^{2^{\eta}} + 1$: Hamming distance, duality, reversibility and LCD properties. *Finite Fields and Their Applications*, 110, 102741, 2026. (Accepted)
- S. Dey, **N. Jana**. Classification Rules for Axial Data: Parametric and Nonparametric Approaches. *Journal of Classification*. October 2025. (DOI: 10.1007/s00357-025-09523-4)

PUBLICATIONS

- P. Bharti, M. Kumar, **M. K. Singh**, and M. Chaudhary. Analytical study of multi-layer one-dimensional spatially dependent solute transport modeling, *Environmental Fluid Mechanics*. October 2025. (DOI: 10.1007/s10652-025-10058-w)
- T. K. Das, **T. Ojha**, N. Choudhury, A. Kaushik, **K. Gupta**. QoS-aware Joint Optimization of Task Offloading and Resource Allocation in Integrated Terrestrial Non-Terrestrial Networks. in *IEEE ANTS*, New Delhi, December 2025. (Accepted)
- S. Anand, A. Gorrela, R. Rahman, N. Choudhury, A. Hazarika, D. Choudhury, **T. Ojha**. Delay-Bounded Adaptive MAC for IEEE 802.15.4e DSME Networks: Enhancing Resilience under Bursty and Dynamic IoT Traffic. in *IEEE ANTS*, New Delhi, December 2025. (Accepted)
- T. C. John, **H. K. Mishra**, and S. Guha. A complete characterization of passive unitary normalizable Gaussian states. *IEEE ISIT 2025*. (DOI: 10.1109/ISIT63088.2025.11195518)
- K. Ji, **H. K. Mishra**, M. Mosonyi, and M. M. Wilde. Converse bounds for quantum hypothesis exclusion: A divergence-radius approach. *IEEE ISIT 2025*. (DOI: 10.1109/ISIT63088.2025.11195689)

INVITED TALKS

- **Prof. P. S. Rao** delivered an invited talk at 6th International Conference on “Recent Trends in Applied and Computational Mathematics” (ICRTACM – 2025) at Reva University Bengaluru. [9-10 October 2025]
- **Prof. H. K. Mishra** delivered an invited talk on “Generalization of Williamson’s theorem for real symmetric matrices” at the Department of Mathematics, IIT Madras (online). [27 October 2025]

SPONSORED PROJECTS

- “Improving The Performance of IEEE 802.11ah UAV Networks In Mission-Critical Defense Environments”, PI: **Prof. A. Kalita**, Co-PI: **Prof. T. Ojha**, Sponsor: NMICPS TiHAN-IIT Hyderabad, Amount: 21,91,792.00, Duration: October 2025 – September 2026.

MATHEMATICS AND COMPUTING NEWS

- **Quantum light breakthrough could transform technology:** Scientists have achieved a breakthrough in light manipulation by using topological insulators to generate both even and odd terahertz frequencies through high-order harmonic generation to amplify light in unprecedented ways, confirming long-theorized quantum effects. [[Read More](#)]
- **AI turns x-rays into time machines for arthritis care:** Researchers at the University of Surrey developed an AI that predicts a person's knee X-ray will look like in a year, helping track osteoarthritis progression. The tool provides both a visual forecast and a risk score, offering doctors and patients a clearer understanding of the disease. [[Read More](#)]
- **Scientists discover a way simulate the Universe on a laptop:** Scientists have developed a groundbreaking tool called Effort.jl that lets them simulate the structure of the universe using just a laptop. The team created a system that dramatically speeds up how researchers study cosmic data, turning what once took days of supercomputer time into just a few hours. [[Read More](#)]

EDITORIAL TEAM

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