
Departmental Seminar

Seminar Title	: Spectral Galerkin Method Based on Chelyshkov Polynomials for Solving Stochastic Integral Equations
Speaker	: Reema Gupta
Supervisor	: Prof. S. Chakraverty
Venue	: Seminar Room (Department of Mathematics)
Date and Time	: 22 Jul 2025 (05:15 pm)
Abstract	: Stochastic integral equations (SIEs) have gained significant attention recently due to their applications in various fields of science and engineering, including turbulent flows, population dynamics, heat transfer problems, and the Black-Scholes option pricing model in mathematical finance. We use these equations to model real-world phenomena where uncertainty or randomness is critical. This study presents an advanced numerical approach to solving linear and nonlinear SIEs through a spectral Galerkin method based on Chelyshkov polynomials. This method simplifies the intricate task of solving such equations into a set of algebraic equations that are efficiently solvable via any numerical method, such as Gauss elimination and Newton's method. Furthermore, convergence analysis is also established. Lastly, Numerical results demonstrate the superiority of the suggested approach in terms of accuracy and computational efficiency.