National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Numerical framework for handling differential equations involving arbitrary order derivatives
Speaker	: Shubham Yadav (Rollno : 523ma1003)
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Venue	: MN-336, Seminar Room, MA dept
Date and Time	: 29 Apr 2025 (04.00 PM)
Abstract	: This study investigates differential equations characterized by multiple fractional derivatives defined in the Caputo sense. To address this problem, we employ a finite difference method, approximating the fractional derivatives using the L1 and L2 schemes on a uniform mesh. A rigorous error analysis is conducted to derive theoretical estimates of the numerical scheme&rsquos accuracy. Numerical computations are performed to evaluate the scheme&rsquos performance and precision, revealing that the rate of convergence achieves a linear order, consistent with the established theoretical estimates. To enhance the accuracy of the scheme, we implement Richardson extrapolation, demonstrating an effective strategy for improving the method&rsquos accuracy.