National Institute of Technology Rourkela

Progress Seminar

Seminar Title	: Existence and multiplicity results for a class of quasilinear elliptic equations with combined nonlinearities
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Venue	: Seminar Room, Department of Mathematics
Date and Time	: 12 Sep 2025 (12:00pm)
Abstract	: Elliptic partial differential equations have applications in various fields of science and engineering, such as reaction&ndashdiffusion problems, conservation laws, the thin obstacle problem, crystal dislocation, soft thin films, flow through fractal non-smooth domains, and the elastic properties of fractal media. They are also important in various areas of mathematics, including harmonic analysis, differential geometry, the calculus of variations, and topology. Our work is devoted to the analysis of elliptic boundary value problems in the framework of weighted Sobolev spaces and generalized Lebesgue&ndashSobolev spaces. Weighted spaces naturally arise when studying PDEs in nonhomogeneous media, on domains with singularities or degenerate and singular coefficients. Quasilinear elliptic partial differential equations with p(y)&minusLaplace operator appear in many areas of science and engineering, like Elasticity, Electrorheological fluids, Image Processing, etc. This seminar discusses solutions for a class of Quasilinear elliptic PDEs with Weighted p&minusLaplacian and p(y)&minusLaplace operator. Using the Nehari manifold method, we proved the existence and multiplicity of solutions.