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Computational Mathematics Seminar Series

Optimally Adapted Finite Element Meshes

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Lockett Hall 233
March 03, 2010 - 03:40 pm**Abstract:**

Given a function f defined on a bounded domain and a number $n > 0$, we study the properties of the triangulation T_n that minimizes the distance between f and its interpolation on the associated finite element space, over all triangulations of at most n elements. The error is studied in the L_p norm or $W^{1,p}$ norm and we consider Lagrange finite elements of arbitrary polynomial order. We establish sharp asymptotic error estimates as n tends to infinity when the optimal anisotropic triangulation is used, and we illustrate these results with numerical experiments.

Speaker's Bio:

Jean-Marie Mirebeau is a PhD student of Albert Cohen, in collaboration with Frederic Hecht and Nira Dyn at the Université Pierre et Marie Curie in France. His research interests are meshing algorithms, anisotropy, finite elements and approximation theory.

