Computational Mathematics Seminar Series

Optimally Adapted Finite Element Meshes

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Abstract:
Given a function f defined on a bounded domain and a number n>0, we study the properties of the triangulation Tn 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 Lp norm or W1p 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 Universite Pierre et Marie Curie in France. His research interests are meshing algorithms, anisotropy, finite elements and approximation theory.

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