

Department of Mathematics

University of Houston

Scientific Computing Seminar

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Convergence analysis of an adaptive interior penalty discontinuous Galerkin method for the Helmholtz equation

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3:00 PM- 4:00 PM

Room 646 PGH

Abstract: We consider the numerical solution of the 2D Helmholtz equation by an adaptive Interior Penalty Discontinuous Galerkin(IPDG) method based on adaptively refined simplicial triangulations of the computational domain. The a posteriori error analysis involves a residual type error estimator consisting of element and edge residuals and a consistency error which, however, can be controlled by the estimator. The refinement is taken care of by the standard bulk criterion(Dörfer marking) known from the convergence analysis of adaptive finite element methods for linear second order elliptic PDEs. The main result is a contraction property for a weighted sum of the energy norm of the error and the estimator which yields convergence of the adaptive IPDG approach. Numerical results are given that illustrate the quasi-optimality of the method.

- This is a joint work with Dr R.H.W Hoppe.

This seminar is easily accessible to persons with disabilities. For more information or for assistance, please contact the Mathematics Department at 743-3500.