



Differential Equations and Applied Math Seminar

Richard Clancy, Texas State University

11am-12pm April 29th, 2016

330 Derrick Hall

Title: Optimal Convergence of Shortley-Weller Formula for Poisson's Equation over Interior Non-Uniform Grid

Abstract: In 1962, Bramble and Hubbard established an error bound for meshes with non-uniformities along their boundaries, but very little is understood in literature about the error when non-uniformity is extended to the domain interior.

Naive error analysis only guarantees first order convergence of the system. In this talk, we establish a second-order error bound for the Shortley-Weller finite difference scheme over a non-uniform mesh. Using a discrete analogue of Green's function and other appropriate mesh-functions, we extend Bramble and Hubbard's result to non-uniformity through the interior of the domain.

We will also discuss the problem that motivated our work and future research.

Interested faculty and graduate students are encouraged to attend.