



Differential Equations and Applied Math Seminar

Dr. Ray Treinen, Texas State University

11am-12pm April 20th, 2018

326 Derrick Hall

Title: Free discontinuity problems with applications to fracture mechanics, part 3

Abstract: We complete our treatment of fracture models and image reconstruction models in the framework of minimizing an energy functional. We present details of approximation techniques for free-discontinuity problems. In these problems the discontinuity could be approximated by methods that smooth out the jump, however, these methods lead to problems with steep gradients, and this in turn leads to inaccurate numerical methods. We will consider approximations of the jump term that are made up of a Dirichlet integral augmented with a scaled double-well function. We will use the theory we have built to show that this approximation Γ -converges to the original problem, in the sense that the approximate minimizers of the approximate problems converge to the minimizers of the original problem.

We are mostly following the book by Andrea Braides.

Interested faculty and graduate students are encouraged to attend.