1019-49-200   **A Garroni** and **C J Larsen*** (`cjlarsen@wpi.edu`). *Threshold-based quasistatic evolution of brittle damage.* Preliminary report.

Recently, Francfort and Garroni introduced a model for quasistatic evolution of brittle damage, based on an energy cost proportional to the volume of the damaged region. There, brittle damage is the weakening of the elastic properties of a material so that it is effectively transformed into a specified weaker material. They proved existence for the corresponding homogenized problem, based on global minimization of the total energy. However, there are some questions about the appropriateness of introducing an energy term proportional to the volume of the weakened material, and of globally minimizing this energy. It would seem that the weakening should correspond to a stress threshold, rather than to solving a problem of global minimization. In this talk, I will formulate a threshold-based problem (both a strong and homogenized version) and prove existence by showing that the Francfort-Garroni solutions are also solutions to this threshold problem. I will also explain why this implies that there are no local minimizers (or even stable states) of the Francfort-Garroni problem, besides global minimizers. This is joint work with A. Garroni. (Received August 15, 2006)