

1086-49-2703 **Chris Larsen*** (cjlarsen@wpi.edu). *New variational problems for material defect evolution.*

Variational methods have proven very useful for finding certain stable states (global minimizers) for elastic materials with defects such as fracture, damage, and plasticity. However, this stability is sometimes too limiting for studying the time evolution of defects; in fact, in some cases global minimizers do not exist even though local minimizers (in the "right" sense for the evolution) do exist. In this talk, I will describe some variational principles, besides global minimality, for studying these evolutions, as well as some remaining challenges. (Received September 25, 2012)