1125-65-2751 **Robert Lipton**, **Paul Sinz*** (psinz1@lsu.edu) and **Michael Stuebner**. *Maximum Energy Concentration Inside Composite Structures.*

A systematic method for identifying the worst case load amongst all boundary loads of a fixed energy is introduced. Here the worst case load is defined as the load which delivers the largest fraction of input energy into a prescribed subdomain of interest. This leads to an eigenvalue problem, for which the largest eigenvalue is the maximum fraction of energy which can concentrate in the subdomain. The associated eigenfunctions are the worst case solutions. The properties of these eigenfunctions motivates a particular Generalized Finite Element Method (GFEM) called the Multiscale Spectral GFEM (MS-GFEM), developed by Babuška and Lipton (2011). (Received September 20, 2016)