

Meeting: 1002, Pittsburgh, Pennsylvania, SS 4A, Special Session on Partial Differential Equations and Applications

1002-35-223 **Victor J. Mizel*** (vm09@andrew.cmu.edu), Department of Mathematical Sciences, Pittsburgh, PA 15213. *Composites of Hyperelastic Materials with Prescribed Lavrentiev Gap Functions*. Preliminary report.

The present article constructs for each given positive continuous increasing function i on a compact interval $[p^0, p^1]$ of the half axis $(1, \infty)$ a “composite” of 2-dimensional hyperelastic materials such that for a certain continuous deformation of the composite satisfying prescribed boundary conditions the relation

$$(*) \quad E|_{W^{1,p}} = i(p) \text{ for all } p \text{ in } [p^0, p^1].$$

for the minimal stored energy E holds. (Received September 14, 2004)