Meeting: 1003, Atlanta, Georgia, SS 27A, AMS-SIAM Special Session on Analysis and Applications in Nonlinear Partial Differential Equations, I

1003-49-1447 **Daniel Vasiliu*** (dvasiliu@math.msu.edu), A327 Wells Hall, Department of Mathematics, Michigan State University, East Lansing, MI 48824, and **Baisheng Yan**. *A restricted lower semicontinuity problem with linear constraints.*

For problems relevant to solid-solid phase transitions in the Material Science one can model the so called microstructure through Young measures. In these situations it is important to study the sequences satisfying

$$dist(Du_k(x), K) \to 0 \tag{1}$$

for almost every $x \in \Omega$ where $\Omega \subset \mathbb{R}^n$ and $K \subset \mathbb{M}^{n\times n}$. The condition (1) is equivalent to the fact that the associated Young measure is being supported on the set K. It is very useful in practice to study the weak lower semicontinuity of functionals $I(u) = \int_\Omega f(Du)dx$ along sequences u_k satisfying constraints like (1) for a given set K. We studied this problem with the set K being a linear subspace $\mathcal{L}$ which satisfies a certain constant dimension condition. We proved that the weak lower semicontinuity of the functional I restricted only to sequences whose gradients approach the linear subspace $\mathcal{L}$ is equivalent to a generalized version of quasiconvexity which we call $\mathcal{L}$-quasiconvexity. (Received October 05, 2004)