ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ

Εβδομαδιαίο Σεμινάριο

Some Topics on the Nonlinear Continuum Theory of Dislocations

Δημήτριος Σφυρής

Ίδρυμα Τεχνολογίας και Έρευνας, Ινστιτούτο Επιστημών Χημικής Μηχανικής, ΙΤΕ-ΕΙΧΗΜΥ

We are interested in the following three problems that arise in the nonlinear continuum theory of dislocations:

1. How can we construct the relaxed manifold?
2. How can we describe the case where a field of dislocations is ”healed” by the symmetry group?
3. What can we say about the strong ellipticity and the solvability of the equations describing such theories when we know the strong ellipticity and the solvability of the corresponding elastic problem?

For answering the first question we propose use of autoparallel and geodesic curves depending on whether the symmetry group of the material is discrete or continuous, respectively. For treating the second question we lay down a set of exterior differential equations which when solved render the totality of uniform references (the dislocations field) that may be “healed” by the given symmetry group. With respect to the third question, we infer that the strong ellipticity condition is retained while for the solvability and for the particular case of antiplane shear of a body with edge dislocations we find suitable bounds on the coefficients (so, on the defects as well) in order solvability to be retained.

Τετάρτη 3 Απριλίου 2013, 5:30μμ

Αίθουσα 201α Τμήματος Μαθηματικών

Μετά την ομιλία ακολουθεί καφές και συζήτηση στο εντευκτήριο του Τμήματος