Kolloquium

UNIVERSITÄT DORTMUND

RUHR-UNIVERSITÄT BOCHUM

Mechanik

Vortragsankündigung

Referent:	**HENRYK PETRYK** Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw, Poland
Thema:	**INSTABILITY OF DEFORMATION PATHS IN INELASTIC SOLIDS**
Ort:	**Universität Dortmund** **Hörsaal HS1**, Maschinenbaugebäude Campus Nord, Leonhard-Euler-Str. 5
Zeit:	**Mittwoch, den 16.01.2002** **16:00 Uhr**

Inhalt:

Reference is made to a quasi-static deformation path which represents a possible response of a time-independent solid to a given loading program. Under general assumptions that result in a symmetric tangent stiffness matrix, the energy criterion of path instability is formulated. It is shown that an unstable path going through stable equilibrium states represents typically a continuous spectrum of bifurcation points. The energy condition necessary for path stability provides a criterion of choice among non-unique solutions. The related computational method for passing bifurcation points with automatic branch switching has been developed. In application to material instability problems, the formation of multiple macroscopic shear bands is investigated as a mechanism of advanced plastic flow of polycrystalline metals. Two micromechanically-based, incrementally nonlinear corner theories of plasticity are used. The overall deformation pattern and material characteristics are determined beyond the critical instant of ellipticity loss, without the need of introducing an internal length scale. The volume fraction occupied by shear bands is found to have initially a well-defined, finite value insensitive to the mesh size in finite element calculations.

Veranstalter:
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