



Vortragsankündigung

- Referent:** **MIROSLAV ŠILHAVÝ**
Mathematical Institute, Academy of Sciences of the Czech Republic
- Thema:** **THE GEOMETRY OF DISLOCATION WALLS
IN CRYSTALS UNDER SINGLE SLIP**
- Ort:** **Universität Dortmund
Hörsaal E 21, Maschinenbaugebäude,
Campus Nord, Leonhard-Euler-Str. 5**
- Zeit:** **Dienstag, den 20.01.2004
16:00 Uhr**
- Inhalt:**

The paper characterizes planar interfaces (dislocation walls) that separate regions of crystals undergoing single slips on arbitrary slip systems in rigid-plastic materials. Using Hadamard's compatibility condition for the total deformation, all possible pairs of single-slip elastic-plastic states on the two sides of the wall are determined. Under a certain 'generic' condition on the relative position of the active slip systems, the slip strains on the two sides of the wall must satisfy a scalar equation, in the remaining 'degenerate' cases they are arbitrary. For such slip strains there are exactly two orientations of the wall normal; these are given by explicit formulas in terms of the two active slip systems. For large plastic strains the axes of the misorientation tensors are always crystallographic but the walls themselves may show deviations from strictly crystallographic orientations. For small plastic strains, in addition to the axes of misorientation, also the walls normals, axes of the tilt and twist, and the directions of the dislocation density tensors are strictly crystallographic; moreover the two walls are always perpendicular. Under the mentioned 'generic' condition the two walls differ in their dislocation structure: one of them is represented by a family of parallel edge dislocations while the other is a superposition of two families of parallel simple dislocations, of which one consists of screw dislocations if the slip strains are small.

Veranstalter:
O.T. Bruhns, K. Hackl, J.F. Kalthoff, S. Reese (Ruhr-Universität Bochum)
H. Obrecht, B. Svendsen, K. Thermann (Universität Dortmund)

Internet: www.ruhr-uni-bochum.de/mechanik/kolloquium.html