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## Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Montag, **20.06.2011, 13:00 Uhr**, Egerlandstr. 5, Raum 0.044

### Numerical modeling of dilute suspension flows of magnetic particles by the Subdomain Boundary Element Method

Prof. Matjaž Hriberšek

Chair for power, process and environmental engineering,  
University of Maribor, Slovenia

A boundary element method based solver for particle motion simulation in dilute suspensions under the influence of hydrodynamic and magnetic forces will be presented. The Euler-Lagrangian formulation is used for simulation of dilute two-phase flow. The Subdomain BEM algorithm solves the incompressible Navier-Stokes equations written in velocity-vorticity formulation. The non-uniform magnetic field is defined analytically for the case of a set of long thin wires. The Kelvin force is additionally considered in the model for translational momentum conservation of a particle. The particle trajectories are computed by applying the 4th order Runge-Kutta method.

The computed test cases consisted of a cellular flow field and a developing flow in a narrow channel under the influence of a nonuniform magnetic field with magnetite and aluminum particles suspended in water.