

# Stochastic homogenization of Prandtl-Reuss plasticity

Dr. Martin Heida (WIAS)

We consider the Prandtl-Reuss model of infinitesimal strain plasticity in the quasistatic regime. Assuming kinematic hardening, we analyze the homogenization of the system in the case that coefficient functions (including the convex function that describes the flow rule) are heterogeneous with a small parameter  $\varepsilon$ . In particular, the heterogeneous structure is assumed to be given through a stationary and ergodic dynamical system scaled by  $\varepsilon$ . We are interested in an effective law that describes limits of solutions as  $\varepsilon \rightarrow 0$ . We obtain the effective system using the recently developed needle-problem approach to homogenization.