Bruyères-le-Chatel, Thursday October 11th, 2018

Dear Editor,

Please find attached the following paper for submission to Archives of Mechanics:

Activation of slip systems in confined single crystal gradient plasticity: coupled effects of slip system orientations, latent hardening, and grain boundaries.

It deals with the activation of slip systems in single crystal gradient plasticity, illustrated in the classical bi-dimensional framework of a strip of infinite extent under shear deformation. The paper focuses on cases for which a selection operates among redundant slip systems under the combined effect of system orientations and latent hardening. The introduction of gradient plasticity effects and micro-hard boundary conditions modifies this selection and yields heterogeneous slip profiles in the strip thickness. Assuming that gradient effects are derived from a free energy potential, the problem is solved by minimizing a bilinear pseudo-potential of material velocity and slip rates.

I believe that these new insights in the plastic behavior of single crystals are worth publishing. Moreover, they have some strong links with some previous works published in Archives of Mechanics.

With my best regards.

Jean-Lin DEQUIEDT