## Penalty method in the study of nonsmooth quasistatic frictional contact with locking materials

Anna Ochal<sup>1</sup>, Anna Kulig

<sup>1</sup> Jagiellonian University in Krakow, Poland

anna.ochal@uj.edu.pl

**Abstract:** In the talk a class of time-dependent variational-hemivariational inequalities is studied. The existence and uniqueness of a solution are proved. Then, the convergence result for a penalized form of the problem is provided. Finally, the results are applied to a quasistatic frictional contact problem for locking materials. The contact is modeled with friction and a nonsmooth multivalued interface law. The law involves unilateral constraints and subdifferential conditions. The weak formulation of the problem leads to an elliptic variational-hemivariational inequality. Under suitable assumptions we obtain its weak unique solvability.