

# A HUBER COMPUTATIONAL APPROACH TO PARAMETER IDENTIFICATION IN THE BINGHAM VISCOPLASTIC FLOW

SERGIO GONZÁLEZ-ANDRADE\*

## ABSTRACT

In this talk, we discuss a numerical strategy for a parameter identification problem associated to the stationary Bingham viscoplastic flow. First, by following a similar approach as the one proposed in [1], we study the well posedness of the problem. In order to deal with the nonsmoothness of the variational inequality (VI) of the second kind, we propose a local Huber regularization. Next, we propose an optimal control problem formulation for the regularized VI, by introducing a suitable misfit function. Then, we deduce an optimality system, involving nonsmooth PDEs and complementary functions (see [2]). For the numerical realization, we propose a finite element discretization of the optimality system, and we explore the application of a semismooth Newton algorithm.

## REFERENCES

- [1] J. Gwinner. *An optimization approach to parameter identification in variational inequalities of second kind*, Optimization Letters, 12 (2018), 1141–1154.
- [2] M. Hintermüller. *Inverse coefficient problems for variational inequalities: optimality conditions and numerical realization*, Mathematical Modelling and Numerical Analysis, 35 (2001), 129–152.

\* RESEARCH CENTER ON MATHEMATICAL MODELING (MODEMAT) AND DEPARTAMENTO DE MATEMÁTICA - ESCUELA POLITÉCNICA NACIONAL DEL ECUADOR, SERGIO.GONZALEZ@EPN.EDU.EC