

# Optimal control of rotationally symmetric viscoplastic fluid flows

Max Winkler<sup>1</sup>    Constantin Christof<sup>2</sup>

Considered are bilevel optimal control problems where the lower-level problem is a nonsmooth minimization problem modelling the flow of non-Newtonian fluids. An equivalent formulation leads to a variational inequality of the second kind. We study differentiability properties for the solution operator and conclude stationarity conditions for the bilevel control problem. Furthermore, we study discretization techniques and efficient optimization algorithms, in particular a DC algorithm (difference of convex functions).

---

<sup>1</sup>TU Chemnitz  
max.winkler@mathematik.tu-chemnitz.de

<sup>2</sup>TU München  
christof@ma.tum.de