

The application of the Finite Element Method in PDE-constrained Shape Optimization of Extrusion Dies

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Stefan Cohn-Vossen Raum (Room 313)
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Abstract:

This Finite Element Method talk consists of three theoretical parts and one optional practical coding session. In the first part, a PDE-constrained shape optimization problem with focus on plastics extrusion as application is explained in a short manner. In the following part the basics of the Finite Element Method as a numerical method for solving the (Navier) Stokes equations are worked out. Finally, several options to solve the PDE-constrained Shape Optimization problem are presented and discussed with hindsight of their respective advantages and disadvantages.

In conclusion and if there is some time left, we will do a live coding session using FEniCS (www.fenicsproject.org) to solve a flow problem by utilizing the Finite Element Method and FEniCS's automated code generation capabilities.