

Parameter Identification in Flow Problems

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Abstract: In this talk we present simultaneous optimization approaches for parameter identification problems in flow models of different structure. We investigate special reduced SQP techniques for the numerical determination of material properties in Bingham flow. These techniques allow a computational effort bound of factor two compared with the effort necessary for the solution of the flow simulation problem alone. The practical problem stems from an application together with the firm Braun, Friedrichshafen. In addition to that also optimum experimental design approaches have to be applied to improve the measurement device used. Here, the underlying flow problem is considered stationary. Furthermore we investigate parameter identification for instationary multiphase flow. There, a special reduced Gauss-Newton technique in combination with a multiple shooting approach is presented which allows a robust solution of the identification problem.

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