On shape optimization with parabolic state equation

Helmut Harbrecht[1] Rahel Brügger[2] Johannes Tausch[3]

This talk is concerned with the solution of time-dependent shape optimization problems. Specifically, we consider the heat equation in a domain which might change over time. We compute Hadamard's shape gradient in case of both, domain integrals and boundary integrals. As particular examples, we consider the one-phase Stefan problem and the detection of a time-dependent inclusion. Numerical results are given.

References:

[1] https://doi.org/10.1137/21M1411007

[2] https://doi.org/10.1137/19M1268628

[1]Department of Mathematics and Computer Science, University of Basel, Switzerland
helmut.harbrecht@unibas.ch

[2]Department of Mathematics and Computer Science, University of Basel, Switzerland
ra.bruegger@unibas.ch

[3]Department of Mathematics, Southern Methodist University, Dallas, Texas, USA
tausch@mail.smu.edu