

Research Project

Shape optimization for space-time problems

Project funded by own resources

Project title Shape optimization for space-time problems

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Organisation / Research unit

Departement Mathematik und Informatik / Computational Mathematics (Harbrecht)

Project start 01.09.2017

Probable end 30.11.2021

Status Completed

The scope of the present project is the analysis and efficient solution of shape optimization problems with time-dependent state equation. The main ingredient is the shape sensitivity analysis, i.e., the analytic computation of the shape gradient. The efficient discretization of both, the shape and the state equation, is a further emphasis of this project. In particular, we intend to apply space-time methods for the solution of the state equation.

Keywords shape optimization, shape calculus, time-dependent state equation

Financed by

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Add publication

Published results

4481253, Brügger, Rahel; Croce, Roberto; Harbrecht, Helmut, Solving a free boundary problem with non-constant coefficients, 0170-4214 ; 1099-1476, Mathematical Methods in the Applied Sciences, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4603988, Brügger, Rahel; Croce, Roberto; Harbrecht, Helmut, Solving a Bernoulli type free boundary problem with random diffusion, 1292-8119 ; 1262-3377, ESAIM. Control, optimisation and calculus of variations, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4619123, Brügger, Rahel; Harbrecht, Helmut; Tausch, Johannes, On the numerical solution of a time-dependent shape optimization problem for the heat equation, 0363-0129 ; 1095-7138, SIAM Journal on Control and Optimization (SICON), Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4640316, Brügger, Rahel; Harbrecht, Helmut, On the reformulation of the Classical Stefan problem as a shape optimization problem, 0363-0129 ; 1095-7138, SIAM Journal on Control and Optimization (SICON), Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4641688, Brügger, Rahel, Shape optimization for time-dependent domains, Publication: Thesis (Dissertationen, Habilitationen)

4642423, Brügger, Rahel; Harbrecht, Helmut; Tausch, Johannes, Boundary integral operators for the heat equation, 0378-620X ; 1420-8989, Integral Equations and Operator Theory, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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