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17. Control Theory and Optimization

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Optimal control of hemivariational inequalities

Optimal control and optimal shape design problems for systems governed by elliptic and parabolic *hemivariational inequalities* (being a generalization of variational inequalities) are considered. The goal is to establish the existence of optimal solutions for problems with integral cost functionals. In the shape design problems the cost depend on the shape through the solution of the hemivariational inequality defined on the domain which should be optimized. The results are directly applicable to many mechanical problems involving nonmonotone, nonconvex and possible multivalued relations between fluxes and forces.

Reference: Z. Denkowski, and S. Migorski, Optimal shape design problems for a class of systems described by hemivariational inequalities, *J. Global Optimiz.* **12** (1998), 37–59.