

Optimal Control of the Sweeping Process

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Resumo/Abstract:

We study a new class of optimal control problems of the sweeping (Moreau) process governed by state-constrained differential inclusions described by the normal cone mapping to a controlled convex moving set in finite dimensions. Various versions of the sweeping process have a great many applications to mechanics, physics, economics, and other branches of applied sciences, while control problems have not been considered for them till the recent time. This talk presents brand new developments on optimal control of a sweeping process with perturbations based on the method of discrete approximations and advanced tools of first-order and second-order variational analysis and generalized differentiation. In this way we justify a numerical technique to find suboptimal controls of the perturbed sweeping process under consideration and derive necessary optimality conditions for exact optimal solutions.