

Optimal Control Problems with Trajectories of Bounded Variation and Hysteresis

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This report deals with an optimal control problem for measure-driven differential equations with rate independent hysteresis. The hysteresis is modelled by scalar rate independent variational inequality with solutions of bounded variation [3, 5]. We prove an existence solution theorem for the system of measure-driven differential equations with hysteresis. The main result is necessary optimality conditions in a form of generalized maximum principle for optimal solutions of the considered control problem. To prove optimality conditions, we regularize impulsive dynamics by adapt an approach based on the discontinuous time reparametrization [2, 4] and some approximation of the variational inequality by an appropriate differential equation [1].

References

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