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## Control and controllability of PDEs with hysteresis

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For a diffusion equation with a complex hysteresis operator we consider the problem of controllability, that is, finding a control which guarantees that the solution reaches a desired value at a given time. It is solved here by a constructive method based on a two-parameter penalty argument. One small parameter penalizes the distance of the solution at final time from the expected value, the second one represents viscous regularization of the underlying rate independent variational inequalities in the hysteresis term. We prove that a solution to the controllability problem can be obtained by passing to the singular limit in the doubly degenerate control system. This is a joint work with Chiara Gavioli from Modena.

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