

# Some recent advances on time optimal control problems for infinite dimensional systems

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We consider the time optimal control problem, with a point target, for a class of infinite dimensional systems with a dynamics governed by an abstract heat or Schrödinger type equation. The main results establish a Pontryagin type maximum principle (for the Schrödinger case) and give sufficient conditions for the bang-bang property of optimal controls (for both types of systems). The results are then applied to some systems governed by partial differential equations. The paper ends by a discussion of possible extensions and by stating some open problems.

The main part of the presented results have been obtained [1] and [2].

## *References*

- [1] S. Micu, I. Roventa and M. Tucsnak, Time optimal boundary controls for the heat equation (with S. Micu and I. Roventa), *Journal of Functional Analysis* **262** (2012), 25–49.
- [2] J. Lohéac and M. Tucsnak, Maximum principle and bang-bang property of time optimal controls for Schrödinger type systems, to appear in *SIAM Journal on Control*.