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# Optimal control of parabolic equations by spectral decomposition

M. Lazar[†], C. Molinari[‡] and J. Peypouquet[‡]

[†] *University of Dubrovnik, Ć. Carića 4, 20000, Dubrovnik, Croatia*
[‡] *Universidad Técnica Federico Santa María, Av. España 1680, Valparaíso, Chile*

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The seminar deals with an optimal control problem of Bolza type for a class of parabolic equations. It consists in finding the initial datum such that

*i*) the final state lies within a prescribed distance to a given target;
*ii*) a cost functional, which comprises an energy term on the control and a regulation term given by a distributed cost on the state, is minimised.

The aim is to show a new methodology −based on a spectral decomposition of the operator governing the evolution of the system− and some preliminary numerical experiments to assess its behavior.

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