

# About the boundary controllability of coupled parabolic equations

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Joint work with

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In this talk we will analyze the null and approximate controllability of the following system:

$$(1) \quad \begin{cases} y_t - \nu \Delta y = 0 & \text{in } Q = (0, T) \times \Omega, \\ y(t, x) = v & \in (0, T) \times \Gamma_0, \\ y(t, x) = 0 & \in (0, T) \times \partial\Omega \setminus \Gamma_0 \\ y(\cdot, 0) = y^0 & \text{in } \Omega, \end{cases}$$

$$(2) \quad \begin{cases} q_t - \Delta q = y & \text{in } Q, \\ q(t, x) = 0 & \in (0, T) \times \partial\Omega, \\ q(\cdot, 0) = q^0 & \text{in } \Omega. \end{cases}$$

where  $\Gamma_0 \subset \partial\Omega$  is a non empty open subset of the boundary.

We will show that, in contrast with the distributed case, the controllability results depend on  $\nu$ . We will give a characterization of  $\nu$  in order to get the approximate controllability of the system. When  $\nu = 1$  we show the null controllability of the system using Fattorini- Russell technique.

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