Controllability of Nonlinear Parabolic Problems in Unbounded Domains

M. González-Burgos*

In this talk we will revisit the problem of the null controllability of nonlinear parabolic problems posed in a nonempty unbounded domain $\Omega \subset \mathbb{R}^N$ with distributed controls supported on $\omega \subset \Omega$, a nonempty open subset. It is well-known that, in this framework, ω must also be an unbounded domain. In

> [G-B, de Teresa] *Some results on controllability for linear and nonlinear heat equations in unbounded domains*, Adv. Differential Equations **12** (2007), no. 11, 1201–1240,

the authors proved some null controllability results for the nonlinear parabolic problem when $\Omega \setminus \overline{\omega}$ is a bounded open. In this talk we will remove that condition and prove that, if the linear version of the problem is null controllable with controls in L^∞, the corresponding nonlinear problem is locally null controllable and even globally null controllable at time T under appropriate growth conditions on the nonlinear term.

*Dpto. Ecuaciones Diferenciales y Análisis Numérico and, Instituto de Matemáticas de la Universidad de Sevilla, Universidad de Sevilla, Spain, email: manoloburgos@us.es