

CONTROLLABILITY OF SEMILINEAR WEAKLY DEGENERATE PARABOLIC EQUATIONS IN BOUNDED DOMAINS

Genni Fragnelli

Dipartimento di Matematica, Università di Roma "Tor Vergata", Via della Ricerca Scientifica, 00133 Roma, Italy fragnelli@mat.uniroma2.it

Key words: degenerate semilinear parabolic equations, null controllability, Carleman estimates.

Abstract

In this talk we present controllability properties of semilinear weakly degenerate parabolic equations in a bounded domain of $(-\infty, +\infty)$. These properties will be obtained as a consequence of an estimate of Carleman type for the one dimensional heat equation

$$u_t - (a(x)u_x)_x + c(t, x)u = h(t, x), \quad (t, x) \in (0, T) \times (0, 1),$$

where $a(\cdot)$ is weakly degenerate at 0. Such an estimate is derived for a special pseudo-convex weight function related to the degeneracy rate of $a(\cdot)$.