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Null-controllability of non-autonomous Ornstein-Uhlenbeck equations. (English)

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Summary: We study the null-controllability of parabolic equations associated to non-autonomous Ornstein-Uhlenbeck operators. When a Kalman type condition holds for some positive time $T > 0$, these parabolic equations are shown to enjoy a Gevrey regularizing effect at time $T > 0$. Thanks to this regularizing effect, we prove by adapting the Lebeau-Robbiano method that these parabolic equations are null-controllable in time $T > 0$ from control regions, for which null-controllability is classically known to hold in the case of the heat equation.

MSC:

93B05 Controllability
93C20 Control/observation systems governed by partial differential equations
35K15 Initial value problems for second-order parabolic equations

Keywords: null-controllability; observability; non-autonomous Ornstein-Uhlenbeck operators; Gevrey regularity; Kalman type condition

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