

The role of the drift term for parabolic Liouville theorems

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In this talk we discuss the validity of Liouville theorems for non-negative solutions to hypoelliptic equations with constant diffusion and linear drift. Assuming that the drift term has imaginary spectrum, we show such one-sided Liouville property as a by-product of an invariant Harnack inequality for ancient solutions to parabolic equations of Kolmogorov type. We focus on the role of the large-scale geometry associated to the drift: the relevance of the hypoelliptic class under discussion (even for the case of elliptic operators) appears naturally in our approach. The talk is based on a joint work with A.E. Kogoj and E. Lanconelli.