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The obstacle problem for parabolic non-divergence form operators of Hörmander type

Abstract. In this paper we establish the existence and uniqueness of strong solutions to the obstacle problem for a class of parabolic sub-elliptic operators in non-divergence form structured on a set of smooth vector fields in $\mathbb{R}^n$, $X = \{X_1, \dots, X_q\}$, $q \leq n$, satisfying Hörmander's finite rank condition. We furthermore prove that any strong solution belongs to a suitable class of Hölder continuous functions. As part of our argument, and this is of independent interest, we prove an a priori interior estimate, valid in the context of Sobolev spaces defined in terms of the system of vector fields.

This is joint work with E. Götmark and K. Nyström
