On a class of hypoelliptic differential operators

Abstract. We talk about regularity properties and the Cauchy-Dirichlet problem associated to hypoelliptic equations of the type

\[ L_0 u + V u = 0, \]

where \( L_0 \) is a second order ultraparabolic operator and \( V \) belongs to a Stummel-Kato class, namely, let \( \Omega \) be an open set contained in \( \mathbb{R}^{n+1} \), \( V \in L^1(\Omega) \) is such that

\[
\lim_{h \to 0} \sup_{(x,t) \in \Omega} \int_{(y,s) \in \Omega, \ t-h^2<s<t} \Gamma_0(x,t,y,s)|V(y,s)|dyds = 0
\]

\[
\lim_{h \to 0} \sup_{(y,s) \in \Omega} \int_{(x,t) \in \Omega, \ s<t<s+h^2} \Gamma_0(x,t,y,s)|V(x,t)|dxdt = 0
\]

where \( \Gamma_0 \) is the fundamental solution for the operator \( L_0 \).