

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 Ω be an open set contained in \mathbb{R}^{n+1} , $V \in L^1(\Omega)$ is such that

$$\lim_{h \rightarrow 0} \sup_{(x,t) \in \Omega} \int_{(y,s) \in \Omega, t-h^2 < s < t} \Gamma_0(x, t, y, s) |V(y, s)| dy ds = 0$$

$$\lim_{h \rightarrow 0} \sup_{(y,s) \in \Omega} \int_{(x,t) \in \Omega, s < t < s+h^2} \Gamma_0(x, t, y, s) |V(x, t)| dx dt = 0$$

where Γ_0 is the fundamental solution for the operator L_0 .