

**NON-VARIATIONAL SUB-ELLIPTIC EQUATIONS:
FUNDAMENTAL SOLUTIONS AND POINTWISE ESTIMATES**

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We present some recent results on non-variational second order equations constructed with smooth vector fields, satisfying the Hormander' rank conditions. We focus on the existence of the fundamental solutions, on Harnack inequalities and on Schauder estimates. The presented results are a first achievement in the study of linear and nonlinear equations arising in curvature problems and mathematical models of the vision.