A. KOGOJ, University of Urbino

Harnack Inequality in sub-Riemannian settings

We consider nonnegative solutions $u : \Omega \longrightarrow \mathbb{R}$ of second order hypoelliptic equations

$$\mathcal{L}u(x) = \sum_{i,j=1}^{n} \partial_{x_i} \left(a_{ij}(x) \partial_{x_j} u(x) \right) + \sum_{i=1}^{n} b_i(x) \partial_{x_i} u(x) = 0,$$

where Ω is a bounded open subset of $\mathbb{R}^n$ and x denotes the point of Ω. For any fixed $x_0 \in \Omega$, we prove a Harnack inequality of this type

$$\sup_K u \leq C_K u(x_0) \qquad \forall\ u \ \text{ such that } \ \mathcal{L}u = 0, u \geq 0,$$

where K is any compact subset of the interior of the $\mathcal{L}$-propagation set of x_0 and the constant C_K does not depend on u.

The result presented are obtained in collaboration with Sergio Polidoro.