

REGULARITY FOR SUBELLIPTIC PDE THROUGH UNIFORM ESTIMATES IN MULTI-SCALE GEOMETRIES

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This talk is a survey of recent results concerning existence and regularity of certain subelliptic equations through a "multi-scale" Riemannian approximation scheme, in which the "forbidden" directions are penalized by a parameter ϵ . The main technical novelties are Gaussian estimates, doubling and Poincare inequalities which are stable as the parameter $\epsilon \rightarrow 0$ and the Riemannian ambient geometry collapses to the sub-Riemannian structure.