

Mathematical Colloquia

Monday, 31 October 2022

17:15 h, lecture room B6 (ExWi)

Prof. Dr. Bruno Franchi, University of Bologna

Regular submanifolds and graphs in Carnot groups

A graded group of step k is a connected, simply connected Lie group whose finite dimensional Lie algebra is the direct sum of k subspaces, in which the bracket relations respect the grading. A Carnot group of step k is a graded group of step k , where the first subspace in this direct sum decomposition generates the entire Lie algebra. A Carnot group carries a natural structure of metric space associated with the so-called Carnot-Carathéodory metric (which is not Riemannian).

In order to develop a Geometric Measure Theory in Carnot groups, the first step is to understand what are the objects that, within Carnot groups, naturally take the role of C^1 or of Lipschitz submanifolds. In this talk we discuss possible “natural” choices that nevertheless fail to be “intrinsic” to the structure of group, and we show that the notion of graph (suitably defined) is in fact the most “natural”.

This talk is based on several papers and ongoing collaboration with Raul Serapioni and Francesco Serra Cassano (U. of Trento).