

N. Bensalem : *Sub-riemannian structure on Heisenberg group*

This course is about the geometric structure of the heisenberg group. We will explain classical as well as recent results. We will develop the following aspects

*Geometric properties of Heisenberg* : definition of Heisenberg group, Heisenberg distribution, horizontal curves, sub-riemannian metrics, accessibility (Chow's theorem).

*Geodesics of Heisenberg distribution*: basic definitions and properties, Hamiltonian approach for sub-riemannian geodesics, properties of normal geodesics, Lagrangian approach of sub-riemannian, abnormal geodesics.

*Intrinsic approach* connection and curvature on the Heisenberg group, properties of Carnot-Carathéodory metric, singular minimizers.