

Sub riemannian tangent spaces and groupoids

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A sub-riemannian structure on a manifold M naturally produces a distance d_{CC} . The study of the metric space (M, d_{CC}) raises 2 natural questions:

- For $x \in M$ is there a metric space that encodes the infinitesimal properties of the structure at x as does the tangent space $(T_x M, g_x)$ in riemannian geometry ?
- If such a space exists what kind of algebraic structure can it be endowed with ?

This problem has been entirely solved by Mohsen in 2021 using the following very elegant and elementary fact: the quotient of any group G by any subgroup H always has a canonical groupoid structure which coincides with the classical quotient group structure as soon as H is normal in G . My goal in this talk is to present Mohsen's construction.

Orateur: LE BRETON, Paul