

INSALATE DI MATEMATICA

presents

5/06/2024

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*Schrödinger evolution on surfaces
in 3D contact sub-Riemannian manifolds*



Abstract:

Sub-Riemannian geometry has emerged in the last twenty years as an independent research domain, with motivations and ramifications in several parts of pure and applied mathematics. In this talk, we will introduce sub-Riemannian manifolds, with a focus on 3D contact sub-Riemannian manifolds. We will be interested in surfaces embedded in this kind of manifolds which, unlike in the Riemannian case, do not inherit a sub-Riemannian structure, making the definition of geometric objects more challenging. In particular we will give the definition of characteristic points, which are the "bad" points on the surface, and of characteristic foliation, which is a foliation of the surface given by the sub-Riemannian structure. We will then talk about the Schrödinger evolution on this foliation and we will see how the self-adjointness of the Schrödinger operator near a characteristic point p depends on a curvature-like invariant at p .

Keywords: sub-Riemannian geometry · Schrödinger operator · surface characteristic points · characteristic foliation

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U5-3014
04:30 pm (CET)



*"Obvious" is the most dangerous word in mathematics.
(Eric Temple Bell)*