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SEMINÁRIO DE GEOMETRIA

Dia 26 de Outubro (sexta-feira), às 13h30, sala 6.2.33

Some aspects of geometric control theory

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Abstract: I will present some of the basic concepts of mathematical control theory, namely controllability and optimal control, with special emphasis to geometric control where tools from differential geometry play an important role. A control system is a family of dynamical systems parameterized by the controls, and so it can be seen as a family of vector fields. The most basic theoretical tool of the geometric viewpoint is the Lie bracket.

Controllability is related to the ability to reach a state from any other state in the system, using the available controls. Optimal control deals with the possibility to do it in the best possible way. These concepts will be illustrated with simple examples.

It time permits I will also present some recent results about sub-Riemannian geodesics on Lie groups and their projections on homogeneous spaces, obtained using optimal control.

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