

The chronological exponential and sub-Riemannian geodesic loop length spectrum in compact, semi-simple Lie groups

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In a semi-simple compact Lie group, endowed with a bi-invariant metric given by the Killing form, there is a nice connection between the group exponential and the geodesics of the Riemannian geometry.

In the first part of the talk we will search for a similar connection in the case of the sub-Riemannian geometry defined by the orthogonal complement of a Cartan subalgebra.

In the second part, we will explore the sub-Riemannian geodesic loop length spectrum in terms of the root system of the Lie group.

The results from the second part are from a joint work with departmental colleagues, M. Krauel, V. Pigno, C. Shanbrom and M. VanValkenburgh.

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