

GEOMETRY AND PHYSICS SEMINAR

Dia 6 de Maio (segunda-feira), às 14h00, sala 6.2.33

Geometry, Topology and Arithmetic of Character Varieties

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Abstract: Given a finitely generated group F and a complex reductive Lie group G , the G -character variety of F , denoted $X_F G = \text{Hom}(F, G) // G$, is typically a singular algebraic variety with interesting geometric and topological properties and appears in many contexts within Mathematical-Physics.

For an important class of such varieties, namely when F is the fundamental group of a Kähler manifold M , $X_F G$ is homeomorphic to a space of G -Higgs bundles over M .

In this seminar, we survey many results on the topology of character varieties concentrating in some simple groups F , such as free or free abelian groups.

We also present explicit computations of the E-polynomial (a polynomial generalization of the Euler-Poincaré characteristic) of some character varieties, which also encode and relate to arithmetic properties of these varieties and with spaces of quiver representations, finishing with some conjectures and open problems.

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