



CENTRO DE
MATEMÁTICA
UNIVERSIDADE DO PORTO

GEOMETRY AND TOPOLOGY SEMINAR

Topology and Arithmetic of $GL(n, \mathbb{C})$ -Character varieties

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Abstract. A Character variety $X_F G$ is a space of representations of a finitely generated group F into a Lie group G . The most interesting cases are when F is the fundamental group of a Kähler manifold M , and G is a reductive group, since then $X_F G$ is homeomorphic to a space of so-called G -Higgs bundles over M . Typically, $X_F G$ are singular algebraic varieties, defined over the integers, and many of its topological and arithmetic properties can be encoded in a polynomial generalization of the Euler-Poincaré characteristic: the E -polynomial. In this seminar, concentrating in the case of the general linear group $G = GL(n, \mathbb{C})$, we present a remarkable relation between the E -polynomials of $X_F G$ and those of $X_F^{irr} G$, the locus of *irreducible representations* of F into G . All concepts will be motivated with several examples, and we will give an overview of known explicit computations of E -polynomials, as well as some conjectures and open problems. This is joint work with A. Nozad, J. Silva and A. Zamora.

FRIDAY, SEPTEMBER 28

15H30

ROOM 1.09

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