1145-14-1829 **Carlos A. Florentino*** (`caflorentino@fc.ul.pt`), Dep. Matematica, Fac. Ciencias, Univ. de Lisboa, Edf. C6, Campo Grande, 1749-016 Lisboa, Portugal. *Topology and Arithmetic of $GL(n,\mathbb{C})$-Character Varieties.* Preliminary report.

Given a finitely generated group F and a complex reductive Lie group G, the G-character variety of F, $X_F G = Hom(F,G)//G$, is typically a singular algebraic variety, defined over the integers, and some of its geometric, topological and arithmetic properties can be encoded in a polynomial generalization of the Euler-Poincaré characteristic: the E-polynomial. The most interesting cases are when F is the fundamental group of a Kähler manifold M, since then $X_F G$ is homeomorphic to a space of G-Higgs bundles over M. 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. We will also give an overview of known explicit computations of E-polynomials, as well as some conjectures and open problems. (Received September 24, 2018)