



CENTRO DE
MATEMÁTICA
UNIVERSIDADE DO PORTO

GEOMETRY AND TOPOLOGY SEMINAR

E-polynomials and geometry of character varieties

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Abstract. With $G = GL(n, \mathbb{C})$, let $\mathcal{X}_\Gamma G$ be the G -character variety of a given finitely presented group Γ , and let $\mathcal{X}_\Gamma^{irr} G \subset \mathcal{X}_\Gamma G$ be the locus of irreducible representation conjugacy classes. We provide a concrete relation, in terms of plethystic functions, between the generating series for Hodge-Euler (also called E -) polynomials of $\mathcal{X}_\Gamma G$ and the one for $\mathcal{X}_\Gamma^{irr} G$, generalizing a formula of Mozgovoy-Reineke. The proof uses a natural stratification of $\mathcal{X}_\Gamma G$ coming from affine GIT and the combinatorics of partitions. Combining our methods with arithmetic ones yields explicit expressions for the E -polynomials of all polystable strata of some $GL(n, \mathbb{C})$ -character varieties of several groups Γ , for low values of n . For the case $\Gamma = F_r$, the free group of rank r , using geometric methods and the language of partitions, we prove that $E(\mathcal{X}_r SL_n) = E(\mathcal{X}_r PGL_n)$, for any $n, r \in \mathbb{N}$, settling a conjecture of Lawton-Muñoz. Using this relation, additional explicit computations of polynomials are also provided.

WEDNESDAY, DECEMBER 11

14H30

ROOM 1.08

Please note the unusual day, time and room!

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