

Title: The curious hard Lefschetz property for character varieties

Abstract:

I will talk about a way to decompose the character variety of a Riemann surface of arbitrary rank with prescribed semisimple generic local monodromies into cells where each cell looks like a product of an affine space and a symplectic torus. This can be thought of as abelianization. As an application, we deduce the curious hard Lefschetz property conjectured by Hausel, Letellier and Rodriguez-Villegas, which claims that the operator of cup product with the class of the holomorphic symplectic form is an isomorphism between complementary degrees of the associated graded with respect to the weight filtration on the cohomology.