

abstract

IAS/PU NUMBER THEORY SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Thanks to the Weil conjectures (proved by Deligne) we know that counting points of varieties over finite fields yields topological information about them. In this talk I will describe such a calculation for certain character varieties, parameterizing representations of the fundamental group of a Riemann surface into GL_n .

I will discuss the main ingredients of the calculation, which involves an array of techniques from combinatorics and representation theory of finite groups of Lie type. The outcome of the calculation has several geometric consequences about the varieties; for example, it allows us to compute their topological Euler characteristic. But more importantly they naturally suggest interesting conjectures about their mixed Hodge polynomials.

Besides their intrinsic interest the varieties in question are closely related to the moduli spaces of Higgs bundles on the surface. Somewhat surprisingly we discover a tight connection between the geometry of these character varieties and the Macdonald polynomials of combinatorics.

This is joint work with T. Hausel and E. Letellier