abstract

JOINT IAS/PU NUMBER THEORY SEMINAR
Topic:

Speaker:

Affiliation:

Date:

Time/Room:

In the 21st-century approach to p-adic Hodge theory, one studies local Galois representations (and related objects) by converting them into modules over certain power series rings carrying certain extra structures (Frobenius actions and derivations). A key tool in matching up the two sides is a certain classification theorem for the second class of objects, called the slope filtration theorem.

A natural step in this program is to try match up analytic families of Galois representations with Frobenius-differential modules over relative power series rings (i.e., with coefficients which are functions on some base space, like an affinoid). For this, one needs to understand how the slope filtration varies in an analytic family, e.g., whether the Newton polygon is semicontinuous. It turns out the answer depends rather significantly on how you set things up, in particular how Frobenius acts on the base space. I'll contrast two important extreme cases: the "arithmetic" case where Frobenius acts trivially on the base (which arises, e.g., when considering Galois representations attached to the Coleman-Mazur eigencurve) versus the "geometric case" when Frobenius really lifts a Frobenius map on the mod p reduction of the base (which arises, e.g., when deforming a p-divisible group and studying the Rapoport-Zink period morphism). Some of this is joint work with Ruochuan Liu.