Algebraic Geometry Seminar

Speaker: Paul Reschke
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Wednesday, March 30, 2016
3:00 PM
258 Hurley Hall

Title: Complex dynamics of birational surface maps defined over number fields

Abstract:

This work is joint with Mattias Jonsson. For a birational self-map with non-trivial first dynamical degree on a complex surface, Bedford and Diller defined an energy condition which when satisfied guarantees nice dynamical properties for the map (with regard, in particular, to a naturally defined invariant measure). However, Favre and Buff showed that the energy condition can fail and that in fact maps without the nice dynamical properties do exist. We show that the energy condition is always satisfied when the map is defined over a number field. The proof uses the dynamics of local height functions associated to an expanding eigen-class in the real Neron-Severi group for the surface. I will explain the use of local height functions in detail for the special case when the surface is the projective plane. I will then describe the difficulties and solutions arising in the general case where the eigen-class is big and nef but not ample; here we obtain an intermediate result of independent interest which describes the dynamics of curves on the surface that are distinguished by being orthogonal to the expanding direction.