Harvard-M.I.T. Algebraic Geometry Seminar

ARAKELOV INEQUALITIES, HIGGS FIELDS, AND THE GEOMETRY OF SUBVARIETIES OF MODULI STACKS (OF CY-MANIFOLDS)

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Abstract:

For a complex manifold Y the morphisms $\varphi : Y \to M_h$ to the moduli stack M_h of canonically polarized manifolds or of minimal models of Kodaira dimension zero are parameterized by the points of a scheme of finite type. If the highest iterated Kodaira-Spencer map for the induced family $f : X \to Y$ is non zero, the family is also rigid.

Assuming in addition, that the general fibre of $f : X \to Y$ satisfies the local Torelli theorem, and that Y is a curve, one has Arakelov-type inequalities bounding the degrees of the Hodge bundles. If those are equalities, Y must be a Shimura curve in M_h and the special Mumford-Tate group of the family is the closure of the monodromy group.

Finally we will discuss some examples, in particular for hypersurfaces in $\mathbb{P}^n$.

Tuesday, November 4th
3:00 p.m.
MIT Room 4–153

`http://www-math.mit.edu/~jstarr/03fsem/`.