

Harvard-M.I.T. Algebraic Geometry Seminar

GEOMETRIC LANGLANDS CORRESPONDENCE AND KAC-MOODY ALGEBRAS

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Abstract:

Representation theory of affine Kac-Moody algebras is the source of some interesting geometry related to local systems on algebraic curves (known as opers) and moduli spaces of G -bundles on curves. I will talk about a conjectural description (joint with D.Gaitsgory) of a certain category of representations of an affine Kac-Moody algebra in terms of the (derived) category of quasi-coherent sheaves on the Springer fiber corresponding to a nilpotent element in the Lie algebra of the Langlands dual group of G .

This is closely related to the geometric Langlands correspondence. Given a local system E for the Langlands group of G on a smooth projective curve X (possibly ramified at some points), one wishes to describe the category of Hecke eigensheaves with "eigenvalue" E on the moduli stack of G -bundles on X (with level structures at those points). A.Beilinson and V.Drinfeld have shown how to construct Hecke eigensheaves starting from representations of the affine Kac-Moody algebra \hat{g} associated to G , so that the categories of Hecke eigensheaves are closely related to categories of modules over \hat{g} .

On the other hand, G.Lusztig has previously defined certain bases in the equivariant K -theory of the Springer fibers, and we expect that they correspond to the bases of irreducible \hat{g} -modules.

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3:00 p.m.

MIT Room 4-163

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