Representations of affine Kac-Moody groups over local and global fields

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Abstract

Let G be a reductive algebraic group over a local field $\mathcal{K}$ or a global field F. It is well know that there exists a non-trivial and interesting representation theory of the group $G(\mathcal{K})$ as well as the theory of automorphic forms on an adelic group $G(\mathbb{A}_F)$. The purpose of this talk is to give a survey of some recent constructions and results, which show that there should exist an analog of the above theories in the case when G is replaced by the corresponding affine Kac-Moody group G_{aff} (which is essentially built from the formal loop group $G((t))$ of G). Specific topics include:

1) Hecke algebras of G_{aff} over a local non-archimedian field $\mathcal{K}$: affine Satake isomorphism, Iwahori-Hecke algebra of G_{aff}, connection with the works of Cherednik and Macdonald;

2) Affine geometric Satake correspondence (after Braverman and Finkelberg)

3) Towards automorphic forms on G_{aff}: affine Eisenstein series and Tamagawa measure.

The talk will be based on joint works with A. Braverman, M. Finkelberg, H. Garland and M. Patnaik as well as on earlier works of H. Garland, M. Kapranov and Y. Zhu.

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