ALGEBRA AND GEOMETRY SEMINAR

Speaker: Khoa Nguyen (Queen's University)

Title: A family of simple smooth modules over the Affine algebra $A_1^{(1)}$

Abstract: Weight modules and Whittaker modules of Lie algebras have been studied intensively in the literature. In particular, highest weight and Whittaker modules share a common property: each vector in a module can be annihilated by a sufficiently large positive part of the Lie algebra. Consequently, combining and studying these two classes of modules together is natural. Such modules are called smooth modules (also called restricted modules), which were defined and studied for affine Kac-Moody algebras by D. Kazhdan and G. Lusztig.

I will introduce a new family of simple smooth modules over the Affine algebra $A_1^{(1)}$ in this talk. Such modules depend on functions φ, which are not Whittaker functions. Nonetheless, simplicity and isomorphism theorem will be provided. This is based on a joint work with Y. Xue and K. Zhao.