

University of Oregon
Department of Mathematics
2015 Niven Lectures
January 27th & 28th

Pavel Etingof

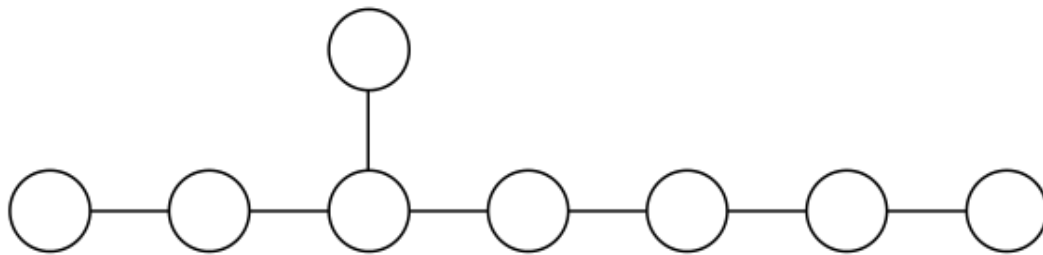
MIT

Representations of quivers and Gabriel's theorem

4:00 pm, Tuesday, January 27, 2015 - Walnut room, EMU

Reception to follow in Fenton 219

A quiver is an oriented graph. A representation of a quiver Q is an assignment of a vector space to every vertex of Q and of a linear map between the corresponding spaces to every edge of Q . One says that Q is of finite type if it has finitely many representations of each dimension up to an isomorphism (over an algebraically closed field). It is interesting which quivers have this property. This question is answered by Gabriel's theorem, which classifies quivers of finite type in terms of ADE Dynkin diagrams and their representations in terms of the corresponding root system. In particular, the property of being finite type is independent on the ground field and the orientation of the quiver. I will explain the statement of this theorem and describe ideas that go into its proof. The prerequisites for this talk are linear algebra and some basic abstract algebra.



Double affine Hecke algebras

2:00 pm, Wednesday, January 28, 2015 - Maple room, EMU

Tea to follow in Fenton 219

Double affine Hecke algebras (DAHA), also called Cherednik algebras, were introduced by I. Cherednik in early 1990s as a tool in his proof of Macdonald's conjectures about Macdonald polynomials. However, it soon became clear that DAHA are interesting in their own right. Nowadays DAHA and their degenerations arise in a multitude of different but interrelated contexts in algebra and representation theory. I will explain the definition and basic properties of DAHA, and review their representation theory and its applications.