

Northeastern University



Mathematics Department

Geometry, Physics, and Representation Theory Seminar

Francesco Sala

Kavli IPMU, University of Tokyo

Thursday, April 4, 2:50-3:50 pm, Lake Hall 509

Continuum Kac–Moody Lie algebras and continuum quantum groups

Abstract

In the present talk, I will define a family of infinite-dimensional Lie algebras associated with a "continuum" analog of Kac–Moody Lie algebras. They depend on a topological version of the notion of the quiver. These Lie algebras have some peculiar properties: for example, they do not have simple roots and in the description of them in terms of generators and relations, only quadratic (!) Serre type relations appear.

I will discuss also their quantizations, which go under the name of "continuum quantum groups". In particular, in the second part of the talk, I will focus on the case when the "topological quiver" is a circle: in this case, the continuum quantum group can be realized by means of the theory of classical Hall algebras. If time permits, I will discuss the representation theory of the continuum quantum group of the circle (in particular, the construction of the Fock space). This is based on joint works with Andrea Appel and Olivier Schiffmann.