

MINI-COURSE

Representations of Infinite Dimensional Lie Algebras

Vyacheslav Futorny (USP, Brazil)

The goal of this mini-course is to give an introduction to the representation theory of various classes of infinite dimensional Lie algebras including Affine Kac-Moody algebras, elliptic Affine algebras (the latter are particular cases of Krichever-Novikov algebras associated with elliptic curves) and Lie algebras of vector fields on N -dimensional torus. In the first lecture we will discuss free field realizations of Affine Lie algebras based on the theory of vertex algebras which provide a mathematical foundation of 2-dimensional conformal field theory. In the second lecture we will discuss vertex type constructions for elliptic Affine Lie algebras and their applications. Finally, the third lecture will focus on classical and new results on the representations of Virasoro algebra and its generalizations for an arbitrary torus.