Simple Harish-Chandra modules over invariant subalgebras in a skew-group ring

E. Vishnyakova

Universidade Federal de Minas Gerais

Abstract

I. Gelfand and M. Zeitlin constructed a basis in any simple finite dimensional $\mathfrak{gl}_n(\mathbb{C})$-modules together with explicit formulas for $\mathfrak{gl}_n(\mathbb{C})$-action. These formulas for $\mathfrak{gl}_n(\mathbb{C})$-action are called *classical Gelfand-Zeitlin formulas*. Later it was noticed by I. Gelfand and M. Graev that the classical Gelfand-Zeitlin formulas may be used to obtain a family of infinite dimensional $\mathfrak{gl}_n(\mathbb{C})$-modules, so called Gelfand-Zetlin $\mathfrak{gl}_n(\mathbb{C})$-modules. A general theory of such modules was developed by Yu. Drozd, S. Ovsienko and V. Futorny. A classification of simple Gelfand-Zeitlin $\mathfrak{gl}_n(\mathbb{C})$-modules was recently obtained by Ben Webster.

We will discuss a generalization of the Gelfand-Zeitlin theory to any invariant subalgebras in a skew-group ring and a construction of a series of simple modules, so-called canonical simple modules. (Joint work with V. Mazorchuk)