MINI COURSE

On the classification of Quantum groups

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Abstract

The aim of this mini-course is to explain an approach to classification of certain quantum groups.

Let g be a complex simple Lie algebra. A quantum group is a Hopf algebra over $C[[h]]$, which has g as its classical limit. To obtain it we, roughly speaking, set $h = 0$. More precisely, being a classical limit of a Hopf algebra, g becomes a Lie bialgebra.

It is well-known that simple Lie algebras are classified by means of the so-called Dynkin diagrams. In 1982, Belavin and Drinfeld classified the corresponding Lie bialgebras by means of the Belavin-Drinfeld triples, which can be described as two isomorphic subdiagrams of the Dynkin diagram of g (they are called triples because the isomorphism between the subdiagrams matters).

In order to classify the corresponding quantum groups we introduce further combinatorial data, which we called Belavin-Drinfeld cohomologies. There are two types of the BD-cohomologies, namely nontwisted and twisted versions.

In my course, I will explain how to describe BD-cohomologies for special linear and orthogonal algebras. No prior knowledge except for the standard facts about simple Lie algebras is needed.

The course is based on joint papers with Iulia Pop (Chalmers University of Technology, Sweden).

Lecture 1:	December 17, 2013 (Tuesday) 3:00 – 4:30pm
Lecture 2:	December 19, 2013 (Thursday) 3:00 – 4:30pm

Room 210, Run Run Shaw Bldg., HKU

All are welcome