



Quantum groups and Hopf algebras

Seminar announcement for the winter term 2018/2019

It is only slightly overstating the case to say that physics is the study of symmetry.

Philip Warren Anderson (1972), nobel prize for physics

Symmetry is a central concept in mathematics and science; many groundbreaking discoveries relied on the study of symmetry. Mathematically, symmetries are understood in the first place as an invariance under an action of a group. However, the developments of modern mathematics and quantum physics revealed the need to go beyond groups in order to capture a new understanding of symmetry. This was the birth of quantum groups in the 1980's, the pioneers being amongst others Drinfeld and Jimbo for algebraic approaches and Woronowicz for an analytic/topological one.

In this seminar, we will address the following questions and topics:

- (Quantum) groups as (quantum) symmetries of (quantum) spaces
- Woronowicz's compact (matrix) quantum groups and their main properties
- Hopf algebras, their main properties and their links to compact quantum groups
- Examples of compact (matrix) quantum groups and of Hopf algebras

The seminar will take place: *date and place to be announced*

— **Preparatory meeting: Wednesday, 18 July, 15:45, SR10 (room 316)** —

The seminar is held in English. This seminar is for students having some basic background in functional analysis. Further information via email (weber@math.uni-sb.de) and on the webpage https://www.math.uni-sb.de/ag/speicher/weber_lehre_SemQGandHAWise1819.html.

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