The concept of reductivity for quantum groups. In positive characteristic the quantum $SL_q(2)$ is reductive for all q

Michał Kępa, Andrzej Tyc

N. Copernicus University, Faculty of Mathematics and Computer Sciences,
ul. Chopina 12/18, 87-100 Toruń, Poland
(e-mail: atyc@mat.uni.torun.pl)

The main aim of my talk is to present a generalization of the well known Mumford definition of a reductive algebraic group to all quantum groups. This generalization has the following properties:

Theorem 1. In characteristic 0 a given quantum group G is reductive if and only if every linear representation of G is semisimple.

Theorem 2. If a quantum group G is reductive and G acts on a commutative and finitely generated algebra A, then the algebra of invariants A^G is finitely generated.

Theorem 3. In positive characteristic the quantum group $SL_q(2)$ is reductive for each parameter q.