Abstract

In this talk I describe our joint with Alexei Miasnikov work on characterization of groups elementary equivalent to a free nilpotent group of arbitrary finite rank and class two. I start with describing a certain family $N_{2,n}$ of nilpotent groups of class two. For a typical member $N_{2,n}(R)$ of this family, the underlying set consists of tuples of elements of a commutative ring R, and group operation is determined by certain fixed polynomials having 1 as the only coefficients. The group $N_{2,n}(\mathbb{Z})$ is a free 2-nilpotent group of rank n, for a natural number $n \geq 2$. The class $N_{2,2}$ coincides with the class of 3×3 upper unitriangular groups denoted by UT_3. We prove a necessary and sufficient condition for a group H be elementary equivalent to $N_{2,n}(\mathbb{Z})$. This work is greatly influenced by the work of O.V. Belegradeck on unitriangular groups.