



北京理工大学

数学与统计学院学术报告

ON DONKIN'S CONJECTURES

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邀请人: 万金奎

时间: 2024年03月18日 14:30-15:30

地点: 中关村校区研究生楼206

摘要: In this talk, I will start by presenting historical background on the lifting of G -structures on modules for the corresponding Lie algebra. Early work was initiated in the 1960's with fundamental results by Curtis and Steinberg for simple modules. Later questions involving projective modules was studied by Humphreys-Verma, Ballard and Jantzen. I will then present background material on two conjectures formulated by Donkin at MSRI in 1990. The first conjecture is Donkin's Tilting Module Conjecture (DTilt), and the second conjecture is Donkin's p -Filtration Conjecture (DFilt). Recent progress by Kildetoft-Nakano and Sobaje has shown that there are important connections between these conjectures. In particular, Jantzen's Question posed in 1980 on the existence of Weyl p -filtrations for Weyl modules for a reductive algebraic group constitutes a central part of the new developments. I will describe how we produced infinite families of counterexamples to Jantzen's Question and Donkin's Tilting Module Conjecture. Counterexamples can be produced via our methods for all groups other than when the root system is of type A_n or B_2 . Later, I will also present a complete answer to Donkin's Tilting Module Conjecture for rank 2 groups. At the end of the talk, I will show a few results that indicate that there might be a positive answer to the Tilting Module Conjecture for groups whose underlying root system is of type A_n . These results represent joint work with Christopher Bendel, Cornelius Pillen and Paul Sobaje.

个人简介: Daniel Nakano, 美国佐治亚大学杰出教授, 2016年获Lamar Dodd Creative Research Award, 国际知名代数学家, 主要从事表示论与李理论的研究, 在国际知名期刊发表100余篇学术论文, 曾任 Transactions of the AMS等期刊编委。