

Oberseminar

zur

Algebra und Algebraischen Kombinatorik

Dr. Qiong Guo

(Universität Stuttgart)

"Restricting unipotent Specht modules of $GL_n(q)$ to $U_n(q)$ and supercharacters"

Let q be a prime power, $G = GL_n(q)$ and let $U \leq G$ be the subgroup of (lower) unitriangular matrices in G . For a partition λ of n denote the corresponding unipotent Specht module over the complex field \mathbb{C} for G by S^λ . It is conjectured that for $c \in \mathbb{Z}_{\geq 0}$ the number of irreducible constituents of dimension q^c of the restriction $\text{Res}_U^G(S^\lambda)$ is a polynomial in q with integer coefficients depending only on c and λ , not on q . We prove the conjecture for the case that $\lambda \vdash n$ is a two part partition. As a consequence, we obtain a new representation theoretic construction of the standard basis of S^λ (over fields of characteristic coprime to q) defined by Brandt, Dipper, James and Lyle and an explanation of the rank polynomials appearing there. In the special case of the partition $\lambda = (1^n)$, the conjecture implies a long-standing (still open) conjecture of Higman, stating that the number of conjugacy classes of U should be a polynomial in q with integer coefficients depending only on n not on q . Andre and Yan discovered a remarkable new decomposition of the regular character of U into a set of orthogonal characters, called supercharacters. We can split off specific irreducible constituents with minimal degree from the supercharacter which satisfies the so called "separate condition".

Mittwoch, 21.08.2013

ab 14:00 Uhr, Raum f309

Hauptgebäude der Leibniz Universität Hannover

Alle Interessierten sind herzlich eingeladen.

gez. Prof. Dr. C. Bessenrodt

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