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On Specht modules for general linear groups. (English) Zbl 1071.20041

J. Algebra 275, No. 1, 106-142 (2004).

Let q be a power of the prime p. Let F be a field of characteristic different from p and containing p-th roots of unity. Fix $n \geq 2$. For each partition λ of n one has the Specht module S^λ, which is a representation over F of the finite group $\mathrm{GL}_n(q)$.

As the authors explain, it is important to understand these Specht modules, even if one cares only about irreducible representations of symmetric groups in arbitrary characteristic, or irreducible rational representations of $\mathrm{GL}_n(\overline{\mathbb{F}_q})$ in the defining characteristic p.

They conjecture that there is a natural basis of S^λ with the following properties. To each basis element is associated a standard λ-tableau t and the number of basis elements that is associated with the same t is given by a polynomial $g_t(\lambda)$ in q. The aim of the paper is to provide evidence for this phenomenon, in particular for two part partitions $\lambda = (n, n-m)$ with $m \leq 11$.

Reviewer: Wilberd van der Kallen (Utrecht)

MSC:

20G05	Representation theory for linear algebraic groups
20G40	Linear algebraic groups over finite fields
20C33	Representations of finite groups of Lie type
20C05	Group rings of finite groups and their modules (group-theoretic aspects)
05E10	Combinatorial aspects of representation theory

Cited in **6** Documents

Keywords:

Specht modules; standard tableaux

Full Text: DOI

References:

[1] Carter, R.W., Simple groups of Lie type, (1972), Wiley New York · Zbl 0248.20015

[2] Dipper, R.; James, G., Identification of the irreducible modular representations of GL_{\textit{n}}(q), J. algebra, 104, 266-288, (1986) · Zbl 0622.20032

[3] Dipper, R.; James, G., The \textit{q}-Schur algebra, Proc. London math. soc., 59, 23-50, (1989) · Zbl 0711.20007

[4] James, G., The representation theory of the symmetric groups, Lecture notes in math., vol. 682, (1978), Springer-Verlag Berlin/Heidelberg/New York · Zbl 0393.20009

[5] James, G., Representations of general linear groups, London math. soc. lecture notes, vol. 94, (1984), Cambridge Univ. Press Cambridge · Zbl 0541.20025

[6] S. Lyle, On Specht modules of general linear groups, J. Algebra, in press · Zbl 1037.20046

[7] Thomas, G.P., Further results on Baxter sequences and generalised Schur functions, () · Zbl 0364.05007

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