

**Pfeiffer, Götz**

**Young characters on Coxeter basis elements of Iwahori-Hecke algebras and a Murnaghan-Nakayama formula.** (English) [Zbl 0834.20013](#)

*J. Algebra* 168, No. 2, 525-535 (1994).

*M. Geck* and the author [*Adv. Math.* 102, No. 1, 79-94 (1993; [Zbl 0816.20034](#))], defined the character table of a generic Iwahori-Hecke algebra associated to a finite Weyl group. This motivates the study of the character tables of all Iwahori-Hecke algebras associated to irreducible Weyl groups. The character tables of the Iwahori-Hecke algebras of exceptional types have been determined by *M. Geck* [*Habilitationsschrift RWTH Aachen* (1993)] with the exception of type  $E_8$ . In [*Invent. Math.* 106, 461-488 (1991; [Zbl 0758.05099](#))] *A. Ram* has proved an explicit formula for the character values of Iwahori-Hecke algebras of type  $A_n$  by rewriting solutions of the Quantum Yang-Baxter equation and by using Schur polynomials.

In this paper the author investigates representations induced from subalgebras corresponding to parabolic subgroups of a finite Weyl group  $W$ . Let  $S' \subseteq S$ . Then the  $T_s, s \in S'$ , generate a subalgebra  $H'$  of  $H$ . If  $V$  is the module arising from the index representation of  $H'$  defined by  $T_s \mapsto q_s, s \in S'$ , then  $V \otimes_{H'} H$  is called a Young module. The corresponding character is called a Young character. The author proves a formula for the Young character values on Coxeter basis elements of the associated Iwahori-Hecke algebra  $H$ . In the second section the author derives from these the values of the irreducible characters on Coxeter basis elements of type  $A_n$ . This enables the author to give an elementary proof of a Murnaghan-Nakayama formula for the character table of Iwahori-Hecke algebras of type  $A$  similar to that by *A. Ram* [*loc. cit.*], by means of the Littlewood-Richardson rule. It is hoped that in a subsequent paper a corresponding formula for the Iwahori-Hecke algebras of type  $B_n$  and  $D_n$ , will be provided.

Reviewer: [Chen Chengdong \(Shanghai\)](#)

**MSC:**

- 20C30 Representations of finite symmetric groups
- 20F55 Reflection and Coxeter groups (group-theoretic aspects)
- 20G05 Representation theory for linear algebraic groups

Cited in **1** Review  
Cited in **5** Documents

**Keywords:**

character tables; Iwahori-Hecke algebras; irreducible Weyl groups; character values; Schur polynomials; parabolic subgroups; finite Weyl groups; irreducible characters; Murnaghan-Nakayama formula

**Full Text:** [DOI](#)