

Zeitschrift: L'Enseignement Mathématique
Herausgeber: Commission Internationale de l'Enseignement Mathématique
Band: 44 (1998)
Heft: 3-4: L'ENSEIGNEMENT MATHÉMATIQUE

Artikel: THE ORIGIN OF REPRESENTATION THEORY
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Bibliographie
DOI: <https://doi.org/10.5169/seals-63909>

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irreducible representations of a finite group, a theorem of Brauer says this number equals the number of conjugacy classes in the group consisting of elements with order prime to p .

7. RECENT RESULTS

Character tables do not provide a way to distinguish any two finite groups, in general. For example, for any prime p the two nonisomorphic nonabelian groups of order p^3 have the same character table. Can we find a computational tool extending the character table which will distinguish any two non-isomorphic finite groups? In 1991, Formanek and Sibley [19] showed that if there is a bijection between two groups G and H which converts $\Theta(G)$ to $\Theta(H)$, then G and H are isomorphic. Since the irreducible characters can be read off (in principle) from the factors of $\Theta(G)$, we see $\Theta(G)$ is one answer to the question. However, if $\#G$ is large then $\Theta(G)$ is too hard to compute. Is there something closer to the character table which works? Yes. See the articles of Hoehnke and Johnson [28, 29] and Johnson and Sehgal [31].

ACKNOWLEDGEMENTS. I thank T. Geisser, K. Khuri-Makdisi, T. Klenke, T. Y. Lam, A. Ofer, R. Pollack, J.-P. Serre, and R. Vakil for their assistance, and MSRI for its hospitality, where part of this was written.

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(Reçu le 27 avril 1998)

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