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978-0-521-09091-9 - Proceedings of the Rutgers Group Theory Year, 1983-1984

Edited by Michael Aschbacher, Daniel Gorenstein, Richard Lyons, Michael O'Nan, Charles Sims and Walter Feit

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With the classification of finite groups, an era of research in the subject ended. Some of the key figures in the classification program organized a research year at Rutgers University to analyze future directions of research in finite group theory.

This volume is a record of the research year and will be vital reading for all group theorists.

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# Proceedings of the Rutgers Group Theory Year, 1983–1984

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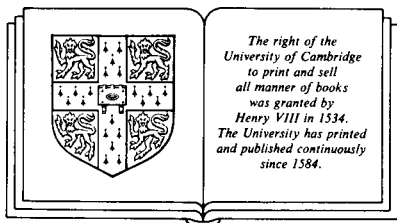
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## PREFACE

These Proceedings are an outgrowth of the Rutgers University Group Theory Year, (January, 1983 - June, 1984), supported in part by the National Science Foundation. The focus during the year was primarily on the following topics:

- 1) Revision of the classification of the finite simple groups.
- 2) Development of the properties of the known simple groups, including properties needed for the classification, the structure of maximal subgroups, and representations.
- 3) Applications of the classification to finite group theory, number theory, and geometry.
- 4) Chamber systems and amalgams.
- 5) Computational algorithms for groups.

A variety of additional topics were touched upon. Our sorting of the contributed papers by topic is admittedly somewhat crude, but at any rate it reflects the main themes of the year.

The participants were asked to include in their articles, wherever possible, open questions and suggested problem areas as a means of stimulating further research in finite group theory, and most of the papers of the Proceedings reflect this point of view.

A word about the "known" simple groups. Now that the simple groups have been classified, all finite groups are "known", so the term is clearly superfluous. However, as the proofs of many results in group theory are completely independent of the classification theorem, while others require the simple group  $G$  under investigation to be a "known" simple group, while still others require not only  $G$ , but each of its proper simple sections to be "known", continued use of the term and the related notion of "K-group" is justified as a way of conveying the nature of the argument to be undertaken.

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It is a pleasure to acknowledge the efforts of a number of people who helped make the Group Theory Year successful. The Rutgers Mathematics Department staff - particularly Lynn Braun, Maryanne Jablonski, Dorothy Kozu, Judith Lige, and Arlene Tarbart - have contributed in many ways. The splendid typing job was done by Annette Roselli.

Finally, the editors extend their special gratitude to Professor Ronald Solomon of Ohio State University, who edited a number of the articles. His name rightfully belongs on the title page with the rest of ours; it is not there only because of our oversight.

New Brunswick, N.J.

July, 1984