

Cambridge University Press

0521477492 - Groups '93 Galway / St Andrews, Volume 1

Edited by C. M. Campbell, T. C. Hurley, E. F. Robertson, S. J. Tobin and J. J. Ward

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# Groups '93 Galway / St Andrews

Galway 1993

Volume 1

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CAMBRIDGE UNIVERSITY PRESS

Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press

The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by Cambridge University Press, New York

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/9780521477499](http://www.cambridge.org/9780521477499)

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First published 1995

*A catalogue record for this publication is available from the British Library*

ISBN-13 978-0-521-47749-9 paperback

ISBN-10 0-521-47749-2 paperback

Transferred to digital printing 2005

Cambridge University Press

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## PREFACE

This is the first of two volumes of the Proceedings of Groups 1993 Galway / St Andrews. There is a full contents of both volumes and papers written by authors with the name of the first author lying in the range A-K. Contained in this part are the papers of the main speakers J L Alperin, M Broué and P H Kropholler, and we would like especially to thank them for their contributions both to the conference and to this volume. There is some perturbation in strict alphabetical order at the join between the volumes and the second volume contains papers written by authors with the name of the first author lying in the range H-Z.

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## INTRODUCTION

An international conference 'Groups 1993 Galway / St Andrews' was held at University College, Galway, Ireland during the period 1 to 14 August 1993. This followed in the main the successful format developed in 1981, 1985 and 1989 by C M Campbell and E F Robertson. They invited T Hurley, S Tobin and J Ward to join them and continue the series in 1993 in Galway. Serious planning got under way when the five organisers met at a Warwick conference in March 1991, and decided to invite as principal speakers J L Alperin (Chicago), M Broué (Paris), P H Kropholler (London), A Lubotzky (Jerusalem) and E I Zel'manov (Madison). All of these agreed to give courses of about five lectures each, and articles based on these courses form a valuable part of these Proceedings - particularly so as in some cases they are strongly complementary in subject matter. Also, as it transpired, one speaker was awarded a Fields Medal exactly one year later at the 1994 ICM in Zurich; the organisers have great pleasure in congratulating Professor Zel'manov most heartily - and hope perhaps that this may augur well for future speakers in the series!

An invitation to J Neubüser (Aachen) to arrange a workshop on Computational Group Theory and the use of GAP was taken up so enthusiastically by him that the workshop became effectively a fully-fledged parallel meeting throughout the second week, with over thirty hours of lectures by experts and with practical sessions organised by M Schönert (Aachen). These Proceedings contain an article by Professor Neubüser based on a lecture he gave in the first week of the conference.

In addition there were sixteen invited one-hour lectures, and a very great number of research talks, which reflected the fact that the meeting was attended by 285 mathematicians (who were accompanied by about 150 family members) from 35 countries around the world. The articles in these Proceedings, other than those of the main speakers, are based on one-hour invited lectures and other research talks.

As in 1989 there are two volumes of the Proceedings, with the contributions arranged according to author's names in alphabetical order from A in Volume One to Z in Volume Two, except for a minor perturbation in alphabetical order at the join between the two volumes. They will form a stimulating record of recent work as well as being a valuable reference source, due to the wealth of material covered in the main courses. We thank all our contributors, and regret that we could not - because of space restrictions - accept several other worthy papers.

An unusual feature of this conference was the setting aside of one day for a special programme of lectures to honour the 65th birthday of Professor K W Gruenberg, in recognition of his many contributions to group theory. A

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second feature was the publication by the Galway Mathematics Department of a splendid memoir by Professor Lubotzky on Subgroup Growth, prepared by him as a background for his course of lectures. Another feature was the videoing of all the talks of the main speakers which form a lovely record of the events. These videos may be obtained from the Galway Mathematics Department.

There are many who helped to make the conference a memorable occasion; in particular we thank the staff of the Computing Services in University College Galway, our colleagues and students, members of the Secretariat in both Galway and St Andrews, and members of our own families who cheerfully helped out in various ways. We extend our thanks to the Administration of University College Galway for the Reception in the Aula Maxima; and we are grateful to the Mayor of Galway who gave a special reception in the Corporation's Council Chamber.

We gratefully acknowledge financial support for the academic program from the London Mathematical Society, the Royal Irish Academy, the Irish Mathematical Society, An Bord Gais, Irish Shell, Allied Irish Banks, Bank of Ireland, Bord Failte, the International Science Foundation, University College Galway, the University of St Andrews and the Deutsche Forschungsgemeinschaft.

As our final word, an focal scuir, we wish to thank Cambridge University Press for help with these Proceedings and Nik Ruškuc for undertaking so willingly the enormous task of reformatting files in many flavours of  $\text{\TeX}$ . As in previous volumes, the present editors have endeavoured to produce a measure of uniformity - hopefully without distorting individual styles. For any inconsistencies in, or errors introduced by, our editing we of course accept responsibility.

Colin M Campbell  
Thaddeus C Hurley  
Edmund F Robertson  
Sean J Tobin  
James J Ward