# BULLETIN ISSN 0004-9727

### of the

## **AUSTRALIAN MATHEMATICAL SOCIETY**

#### Volume 40 Number 2

October 1989

Groups whose three-generator subg	roups are	e free							
Gilbert Baumslag and Peter B.	Shalen	attent.	-		16.4	- 2	4.4		163
Generators for the bounded automo	rphisms	of infu	nite-ran	ık free	nilpot	ent gro	oups		
R.G. Burns and Lian Pi								- 8 - F	175
The hereditary measure of an algebra	ra								
Vlastimil Dlab					3.3				189
Embedding and representation theor	rems for	clones	and ve	arieties					
Trevor Evans		• •			in site				199
Automorphisms of nilpotent-by-abel	lian grou	ps							
C.K. Gupta and Frank Levin		4.4					1014		207
Third Engel groups									
N.D. Gupta and M.F. Newman	144							2.4	215
Some groups all of whose proper ver	rbal quot	ients a	re rela	tively	free				
Graham Higman									231
Free Fibonacci algebras									
D.L. Johnson and A.C. Kim									235
Permutable word products in groups	5								
P.S. Kim and A.H. Rhemtulla		1913				a call	4.4		243
Wreath decompositions of finite per	nutation	group	s						
L.G. Kovács								5.0	255
Some remarks on the computation o	f conjug	acy cla	sses of	solubl	e grouj	os			
M.Mecky and J. Neubüser								**	281
On the date of Cauchy's contribution	ns to the	found	ing of	the the	eory of	groups	\$.		
Peter M. Neumann									293
On bilinear forms represented by tre	ees								
Walter D. Neumann				14.54	÷ •.	-	1.1		303
Growth sequences of finitely generat	ed group	s II							
A.G.R. Stewart and James Wie	gold		4.44	-	2.2				323
On some groups with trivial multipli	icator								
James Wiegold			6.5			-			331
Homomorphisms on an orthogonally	decomp	osable	Hilber	t space	e V				
Sadayuki Yamamuro									333

The Australian Mathematical Publishing Assoc. Inc., St Lucia, Queensland, 4067, Australia Printed in Australia by Watson Ferguson & Co.

Registered by Australia Post-Publication No. QBQ2945

#### BULLETIN<sup>1</sup> OF THE AUSTRALIAN MATHEMATICAL SOCIETY

#### Editor: Sheila Oates-Williams

Deputy Editor: A.S. Jones

#### Honorary Editor: B.H. Neumann

#### ASSOCIATE EDITORS

Robert S. Anderssen Alan L. Andrew E.J. Billington J. Clark B.D. Craven Brian A. Davey

P. Diamond P.G. Dodds P. Donovan J.R. Giles J.R.J. Groves J.A. Hempel B.D. Hughes G. Huisken D.C. Hunt B.D. Jones P.E. Kloeden K.L. McAvaney

Sidney A. Morris G.B. Preston J.H. Rubinstein Ross Street G. Szekeres D.G. Tacon

E.U. Tarafdar

A.J. van der Poorten N.C. Weber

ASSISTANT EDITORS

K.G. Smith

G.A. Chandler

#### Information for Authors.

The Bulletin of the Australian Mathematical Society aims at quick publication of original research in all branches of mathematics. Timely expository articles are also welcomed.

To ensure speedy publication, editorial decisions on acceptance or otherwise are taken quickly, normally within a month of receipt of the paper Papers are accepted only after a careful evaluation by the Editor and an Associate Editor or other expert in the field. <u>As even minor revisions are generally not</u> <u>permitted</u>, authors should read carefully all the details listed below and on the inside back cover. For a paper to be acceptable for publication, not only should it contain new and interesting results but also

- (i) the exposition should be clear and attractive, and
- (ii) the manuscript should be in publishable form, without revision.

Authors should submit three clean, high quality copies to

- The Editor, Bulletin of the Australian Mathematical Society,
- Department of Mathematics, University of Queenssland,
- St. Lucia, Queensland, 4067, Australia

Unless requested at the time, material submitted to the Bulletin will usually not be returned. Note that each paper submitted must include an abstract and one or more classification numbers following the 1980 Mathematics Subject Classification. (1985 Revision)

#### Abstracts of Ph.D. Theses..

The Bulletin endeavours to publish abstracts of all accepted Australasian Ph.D. theses in mathematics. One restriction, however, is that the abstract must be received by the Editor within 6 months of the degree being approved.

<sup>&</sup>lt;sup>1</sup> © Copyright Statement Where necessary, permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by the Treasurer, Australian Mathematical Publishing association, Inc., for libraries and other uses registered with the Copyright Clearance Center (CCC), provided that the base fee of \$A2.00 per copy of article is paid directly to CCC, 21 Congress Street, Salem, MA 01970, U.S.A. Special requests should be addressed to the Treasurer, Australian Mathematical Publishing Association, Inc., c/- Department of Mathematics, University of Queensland, St. Lucia, Qld., 4067, Australia. Serial-fee code: 0004-9727/88 \$A2.00 + 0.00.

#### BULLETIN

#### OF THE AUSTRALIAN MATHEMATICAL SOCIETY

The eightieth birthday of Professor Bernhard Neumann, FACE, FAA, FRS, the founding editor of the Bulletin of the Australian Mathematical Society, occurs on 15 October, 1989. This October issue of the Bulletin is devoted to papers dedicated to him. It conveys not only the best wishes of all the authors, but also those of the many "Amici et cognati" who, for reasons of space, or otherwise, were unable to contribute as they would have wished to do.



BHheem aun

BULL. AUSTRAL. MATH. SOC.

The Editor wishes to thank all those who assisted in the production of this issue. Especially she wishes to thank Dr R.G. Burns, who acted as associate editor for many of the papers.