

MATHEMATICAL PROCEEDINGS

(formerly *Proceedings*)

*of the
Cambridge Philosophical Society*

VOLUME 163



CAMBRIDGE
UNIVERSITY PRESS

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP, United Kingdom

CAMBRIDGE UNIVERSITY PRESS

University Printing House, Shaftesbury Road, Cambridge CB2 8BS, United Kingdom
32 Avenue of the Americas, New York, NY 10013–2473, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
C/Orense, 4, planta 13, 28020 Madrid, Spain
Lower Ground Floor, Nautica Building, The Water Club, Beach Road,
Granger Bay, Cape Town 8005, South Africa

© Cambridge Philosophical Society 2017

Printed in the United Kingdom by Bell and Bain Limited, Glasgow

INDEX FOR VOLUME 163

	PAGE
Angel, O., Balka, R. & Peres, Y. Increasing subsequences of random walks	173
Bachoc, C., Serra, O. & Zémor, G. An analogue of Vosper's theorem for extension fields	423
Badziahin, D., Harrap, S. & Hussain, M. An Inhomogeneous Jarník type theorem for planar curves	47
Brady, Z. Divisor function inequalities, entropy, and the chance of being below average	547
Carette, M., Wise, D. T. & Woodhouse, D. J. The A-T-menability of some graphs of groups with cyclic edge groups	145
Cho, P. J. & Kim, H. H. Extreme residues of Dedekind zeta functions	369
Creutz, B. & Voloch, J. F. Local-global principles for Weil–Châtelet divisibility in positive characteristic	357
Dimca, A. Freeness versus maximal global Tjurina number for plane curves	161
Estrada, S., Gillespie, J. & Odabaşçı, S. Pure exact structures and the purederived category of a scheme	251
García-Rodríguez, J., Jaikin-Zapirain, A. & Jezernik, U. Units of group rings, the Bogomolov multiplier and the fake degree conjecture	115
Ghosh, D. & Puthenpurakal, T. J. Corrigendum to “Asymptotic prime divisors over complete intersection rings” [Math. Proc. Camb. Phil. Soc. 160 (3) (2016) 423–436]	381
Gould, V. & Hartmann, M. Coherency, free inverse monoids and related free algebras	23
Hazi, A. Radically filtered quasi-hereditary algebras and rigidity of tilting modules	265
Henry, S. Measure theory over boolean toposes	1
Kane, D. M. & Thorne, J. A. On the ϕ -Selmer groups of the elliptic curves $y^2 = x^3 - Dx$	71
Kawakita, M. Divisors computing the minimal log discrepancy on a smooth surface	187
King, A. & Pressland, M. Labelled seeds and the mutation group	193
Krupiński, K. & Pillay, A. Generalised Bohr compactification and model-theoretic connected components	219
Miranda-Neto, C. B. Analytic spread and non-vanishing of asymptotic depth	289
Olshanskii, A. Yu. Subnormal subgroups in free groups, their growth and cogrowth	499
Peña, J. L., Majid, S. & Rietsch, K. Lie theory of finite simple groups and the Roth property	301
Perret–Gentil, C. Gaussian distribution of short sums of trace functions over finite fields	385
Pikhurko, O., Staden, K. & Yilma, Z. B. The Erdős–Rothschild problem on edge-colourings with forbidden monochromatic cliques	341
Rennie, A., Robertson, D. & Sims, A. Groupoid Fell bundles for product systems over quasi-lattice ordered groups	561
Rohrlich, D. E. Quaternionic Artin representations of \mathbb{Q}	95
Schleischitz, J. Diophantine approximation on polynomial curves	533
Shimada, I. Holes of the Leech lattice and the projective models of $K3$ surfaces	125
Stix, J. & Vdovina, A. Simply transitive quaternionic lattices of rank 2 over $\mathbb{F}q(t)$ and a non-classical fake quadric	453

INSTRUCTIONS TO AUTHORS

1. Preparation of Manuscripts

A paper should be submitted electronically to mpeditor@hermes.cam.ac.uk in pdf form only. Authors are encouraged to prepare their manuscripts in LaTeX 2 ϵ using the PSP class file. The class file, together with a guide, PSP2egui.tex, and sample pages, PSP2esam.tex, can be downloaded from <ftp://ftp.cambridge.org/pub/texarchive/journals/latex/psplib> in either packed or unpacked form. These files will be updated periodically: please ensure that you have the latest version.

A cover page should give the title, the author's name and institution, with the address to which mail should be sent.

The title, while brief, must be informative (e.g. *A new proof of the prime-number theorem*, whereas, *Some applications of a theorem of G. H. Hardy* would be useless).

Authors are asked to provide an abstract as a basis for search on the Web. This may be an explicit abstract at the start of the paper. Otherwise the first paragraph or two should form a summary of the main theme of the paper, providing an abstract intelligible to mathematicians. Please note that the abstract should be able to be read independently of the main text. References should therefore not be included in the abstract.

Authors are encouraged to check that where references are given, they are used in the text. Experience has shown that unused references have a habit of surviving into the final version of the manuscript.

For a typescript to be accepted for publication, it must accord with the standard requirements of publishers, and be presented in a form in which the author's intentions regarding symbols etc. are clear to a printer (who is not a mathematician). Please also check the Cambridge University Press website for information about the style in which the paper should be submitted.

2. Notation

Notation should be chosen carefully so that mathematical operations are expressed with all possible neatness, to lighten the task of the compositor and to reduce the chance of error. For instance n sub k is common usage, but avoid if possible using c sub n sub k . Fractions are generally best expressed by a solidus. Complicated exponentials like:

$$\exp\{z^2 \sin \theta/(1+y^2)\}$$

should be shown in this and no other way.

It helps if displayed equations or statements which will be quoted later are numbered in order on the right of their line. They can then be referred to by, for example 'from (7)'.

The author must enable the printer (if necessary by pencilled notes in the margin) to distinguish between similar symbols such as o , O , o , O , 0 ; x , X , \times ; ϕ , Φ , \emptyset ; l , 1 ; e , k , κ .

Footnotes should be avoided.

Please use typewriter font for all addresses and email addresses.

Omit \square from the end of proofs.

In listing assertions, conclusions, etc. do not use a vertical column of dots and do not follow (a) or (i) by a capital letter (eg. (i) the absolute value ...)

In making references precise use [3, theorem 5.1]

3. Diagrams

Diagrams should be in black ink or from a high-quality laser printer and should not be larger than 30 cm by 45 cm. Lettering to be inserted by the printer should be shown clearly on copies of the figures rather than on the original drawings. Please note that a charge may be made if hand-drawn diagrams need to be re-drawn for publication.

Figure 1 here

A typed list of captions may be provided at the end of the manuscript in the following format:

Figure 1. A basis for ...

Note that there is no point at the end of the heading. All headings should be centred.

4. Tables

Tables should be numbered (above the table) and set out on separate sheets. Indicate the position of each in the text as for figures:

Table 3 here

Heading for tables should be shown in the following way:

Table 1. A basis for ...

Note that there is no point at the end of the heading. All headings should be centred over columns.

5. References

References should be collected at the end of the paper numbered in alphabetical order of the authors' names. Where references are given, they should be used in the text. Titles of journals should be abbreviated as in *Mathematical Reviews*. The following examples show the preferred style for references to a paper in a journal, a paper in a proceedings volume, a book and an unpublished dissertation:

- [1] J. F. ADAMS. On the non-existence of elements of Hopf invariant one. *Ann of Math.* (2) **72** (1960), 20-104.
- [2] M. P. FOURAM and D. S. SCOTT. Sheaves and logic. In *Applications of Sheaves* Lecture Notes in Math. vol. 753 (Springer-Verlag, 1979), pp. 302-401.
- [3] P. T. JOHNSTONE. *Stone Spaces*. Cambridge Studies in Advanced Math. no. 3 (Cambridge University Press, 1982).
- [4] F. W. LAWVERE. Functional semantics of algebraic theories. PhD. thesis. Columbia University (1963).

6. Submission of papers accepted for publication

When a paper has been accepted for publication the relevant TeX files of the final version, accompanied by a pdf file, should be sent to the Editor by e-mail.

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see www.fsc.org for information.

MATHEMATICAL PROCEEDINGS

*of the
Cambridge Philosophical Society*

VOLUME 163 PART 3, pages 385–580, November 2017

CONTENTS

PERRET–GENTIL, C. Gaussian distribution of short sums of trace functions over finite fields	385
BACHOC, C., SERRA, O. & ZÉMOR, G. An analogue of Vosper's theorem for extension fields	423
STIX, J. & VDOVINA, A. Simply transitive quaternionic lattices of rank 2 over $\mathbb{F}q(t)$ and a non-classical fake quadric	453
OLSHANSKII, A. YU. Subnormal subgroups in free groups, their growth and cogrowth	499
SCHLEISCHITZ, J. Diophantine approximation on polynomial curves	533
BRADY, Z. Divisor function inequalities, entropy, and the chance of being below average	547
RENNIE, A., ROBERTSON, D. & SIMS, A. Groupoid Fell bundles for product systems over quasi-lattice ordered groups	561

©The Cambridge Philosophical Society 2017

Cambridge Core

For further information about this journal
please go to the journal website at:
cambridge.org/psp



MIX

Paper from
responsible sources
FSC® C007785

CAMBRIDGE
UNIVERSITY PRESS