# MATHEMATICAL PROCEEDINGS

(formerly Proceedings)

of the Cambridge Philosophical Society

VOLUME 176





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 2024

Printed and bound by CPI Group (UK) Ltd, Croydon, CR0 4YY

### INDEX FOR VOLUME 176

	PAGE
Ackelsberg, E. & Bergelson, V. Multiple recurrence and popular differences for polynomial	
patterns in rings of integers	239
Assing, E. The sup-norm problem beyond the newform	517
Bekka, B. On Bohr compactifications and profinite completions of group extensions	373
Bergström, J., Howe, E. W., Lorenzo García, E. & Ritzenthaler, C. Lower bounds on the	
maximal number of rational points on curves over finite fields	213
Bui, H. M., Pratt, K. & Zaharescu, A. A problem of Erdős–Graham–Granville–Selfridge on	
integral points on hyperelliptic curves	309
Chen, D. Nonvarying, affine and extremal geometry of strata of differentials	361
Chen, L., Crider-Phillips, G., Reinoso, B., Sabloff, J. & Yao, L. Non-Orientable Lagrangian	
Fillings of Legendrian Knots	123
Cicek, F. & Gonek, S. M. The uniform distribution modulo one of certain subsequences of	
ordinates of zeros of the zeta function	593
De Boer, D., Buys, P., Guerini, L., Peters, H. & Regts, G. Zeros, chaotic ratios and the	
computational complexity of approximating the independence polynomial	459
Dotsenko, V. & Flynn–Connolly, O. Three Schur functors related to pre-Lie algebras	441
Doyle, J. R., Healey, V. O., Hindes, W. & Jones, R. Galois groups and prime divisors in	
random quadratic sequences	95
Feller, P., Lewark, L. & Lobb, A. On the values taken by slice torus invariants	55
<b>García, C. G.</b> Zariski dense surface subgroups in $SL(n, \mathbb{Q})$ with odd n	643
Hackney, P. Categories of graphs for operadic structures	155
Ishii, S. A bound of the number of weighted blow-ups to compute the minimal log discrepancy	
for smooth 3-folds	495
Keller, T. M. & Moretó, A. Prime divisors and the number of conjugacy classes of finite groups	1
Kochloukova, D. H. & de Gamiz Zearra, J. L. On subdirect products of type FP <sub>n</sub> of limit	
groups over Droms RAAGs	417
Le Boudec, A. & Matte Bon, N. Some torsion-free solvable groups with few subquotients	279
Len, Y., Ulirsch, M. & Zakharov, D. Abelian tropical covers	395
<b>Lim, M. F.</b> Structure of fine Selmer groups over $\mathbb{Z}_p$ -extensions	287
Masser, D. How to solve a binary cubic equation in integers	609
Ontani, R. & Stoppa, J. Log Calabi–Yau surfaces and Jeffrey–Kirwan residues	547
Ostafe, A., Shparlinski, I. E. & Voloch, J. F. Weil Sums over Small Subgroups	39
Silva, O. N. On the topology of the transversal slice of a quasi-homogeneous map germ	339
Sourmelidis, A. & Steuding, J. Spirals of Riemann's Zeta-Function — Curvature, Denseness and Universality	325
Untrau, T. Equidistribution of exponential sums indexed by a subgroup of fixed cardinality	65
<b>Viganò, F.</b> Complex multiplication and Noether–Lefschetz loci of the twistor space of	50
a K3 surface	17
Wu, Z. A note on Hodge–Tate spectral sequences	625
······································	0_0

#### 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 2e 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/psp-cls 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  $n \, \operatorname{sub} k$  is common usage, but avoid if possible using  $c \, \operatorname{sub} n \, \operatorname{sub} k$ . 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  $o, O, o, O, 0; x, X, x; \phi, \Phi, \emptyset; 1, 1; e,k, \kappa,k$ .

Footnotes should be avoided.

Please use typewriter font for all addresses and email addresses.

Omit \* 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  $\ldots$ )

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<sup>TM</sup>-certified paper and cover board. FSC is an independent, nongovernmental, 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 176 PART 3, pages 495-653, May 2024

## CONTENTS

SHIHOKO ISHII A bound of the number of weighted blow-ups to compute the	
minimal log discrepancy for smooth 3-folds	495
EDGAR Assing The sup-norm problem beyond the newform	517
RICCARDO ONTANI & JACOPO STOPPA Log Calabi-Yau surfaces and Jeffrey-Kirwan	
residues	547
FATMA ÇIÇEK & STEVEN M. GONEK The uniform distribution modulo one of certain	
subsequences of ordinates of zeros of the zeta function	593
DAVID MASSER How to solve a binary cubic equation in integers	609
ZHIYOU WU A note on Hodge–Tate spectral sequences	625
CARMEN GALAZ GARCÍA Zariski dense surface subgroups in $SL(n,\mathbb{Q})$ with	
$\operatorname{odd} n$	643

©The Cambridge Philosophical Society 2024

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



