# Mathematika

VOLUME 59, 2013

# **Editorial Board**

Managing Editor

ALEX SOBOLEV, University College London Analysis, spectral theory, PDEs

KEITH BALL FRS, University of Warwick Discrete geometry, functional analysis, information theory

IMRE BÁRÁNY, University College London Convex geometry with applications

ANTHONY CARBERY, The University of Edinburgh Classical harmonic analysis

TIMOTHY GOWERS FRS, University of Cambridge Analysis, combinatorics

FRANCIS JOHNSON, University College London Algebra, geometric group theory and topology

MINHYONG KIM, University of Oxford and Pohang University of Science and Technology Number theory, algebraic geometry

IMRE LEADER, University of Cambridge Combinatorics, graphs

ALEXANDER MOVCHAN, University of Liverpool Mathematical methods of solids, boundary value problems

ASSAF NAOR, New York University/Courant Institute Analysis, geometry

FRANK SMITH, University College London Industrial and biomedical modelling

KANNAN SOUNDARARAJAN, Stanford University Number theory

JEAN-MARC VANDEN-BROECK, University College London Fluid mechanics, free boundary problems, scientific computing and asymptotics

ROBERT VAUGHAN FRS, Pennsylvania State University Analytic number theory

GÜNTER M. ZIEGLER, Freie Universität Berlin Discrete geometry, polytopes, topological methods

### Ownership and Publication of Mathematika

*Mathematika* was founded in the early 1950s by Harold Davenport and is owned by University College London. Since 2010, the journal has been published on behalf of its owner by the London Mathematical Society (LMS). The LMS is the major British learned Society for mathematics and publishes twelve other journals, five of which are in collaboration with other learned societies. Cambridge University Press prints and distributes *Mathematika* under agreement with the London Mathematical Society.

All articles, including the full archive dating back to 1954, are available electronically via Cambridge Journals Online.

### Aims and Scope

*Mathematika* publishes both pure and applied mathematical articles of the highest quality. The traditional emphasis has been towards the purer side of mathematics but applied mathematics and articles addressing both aspects are equally welcome.

### **Submission of Manuscripts**

Authors wishing to submit a paper for publication should follow the guidelines available via the webpage http://www.lms.ac.uk/publications.

Authors will be asked to assign copyright to University College London prior to publication.

No paper should have been published or be under consideration for publication elsewhere. Nor may the paper be submitted elsewhere while it remains under consideration by *Mathematika*.

# Offprints

A URL giving free access to the final published article will be provided free of charge. Offprints can be ordered on the form which will accompany the page proofs.

### Printed back numbers

Orders for volume 56 (2010) onwards should be sent to Cambridge University Press. Printed copies of volume 55 (2009) and earlier volumes are available from the Department of Mathematics, University College London. Please contact mathematika@math.ucl.ac.uk.

### Copying

This journal is registered with the Copyright Clearance Centre, 222 Rosewood Drive, Danvers, MA 01923, USA. Organizations in the USA that are registered with the CCC may therefore copy material beyond the limits permitted by sections 107 and 108 of US copyright law subject to payment to CCC of the per-copy fee. This consent does not extend to multiple copying for promotional and commercial purposes. Code 0025-5793/2013.

Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions. For all other use, permission should be sought from Cambridge or the American branch of Cambridge University Press.

Published by the London Mathematical Society on behalf of University College London.

Typeset by Sunrise Setting Ltd, Paignton, UK. Printed in the UK by Bell and Bain Ltd.

# Mathematika

VOLUME 59 PART 2 JULY 2013

<b>Evan P. Dummit</b> and <b>Márton Hablicsek</b> Kakeya sets over non-Archimedean local rings	257-266
<b>Sean Eberhard</b> Almost all sets of $d + 2$ points on the $(d - 1)$ -sphere are not subtransitive	267-268
Yiannis N. Petridis and Morten S. Risager Dissolving of cusp forms: higher- order Fermi's golden rules	269-301
<b>Maosheng Xiong</b> On Selmer groups of quadratic twists of elliptic curves with a two-torsion over $\mathbb{Q}$	303-319
<b>Liangpan Li</b> Zero-one laws in simultaneous and multiplicative Diophantine approximation	321-332
<b>Damien Roy</b> A small value estimate for $\mathbb{G}_{\mathrm{a}} \times \mathbb{G}_{\mathrm{m}}$	333-363
<b>Armen Vagharshakyan</b> Lower bounds for $L_1$ discrepancy	365-379
<b>Emek Demirci Akarsu</b> and <b>Jens Marklof</b> The value distribution of incomplete Gauss sums	381-398
Ben Lichtin On a conjecture of Igusa	399-425
Jonathan W. Bober and Leo Goldmakher The distribution of the maximum of character sums	427-442
<b>Justas Kalpokas, Maxim A. Korolev</b> and <b>Jörn Steuding</b> Negative values of the Riemann zeta function on the critical line	443-462
<b>T. A. Suslina</b> Homogenization of the Dirichlet problem for elliptic systems: $L_2$ -operator error estimates	463-476
Horst Martini, Christian Richter and Margarita Spirova Intersections of balls and sets of constant width in finite-dimensional normed spaces	477-492
Bhaskar Bagchi and Basudeb Datta On polytopal upper bound spheres	493-496
<b>Nicolas de Saxcé</b> Subgroups of fractional dimension in nilpotent or solvable Lie groups	497-511

Cambridge Journals Online For further information about this journal please go to the journal web site at: journals.cambridge.org/mtk



https://doi.org/10.1112/S0025579312001222 Published online by Cambridge University Press