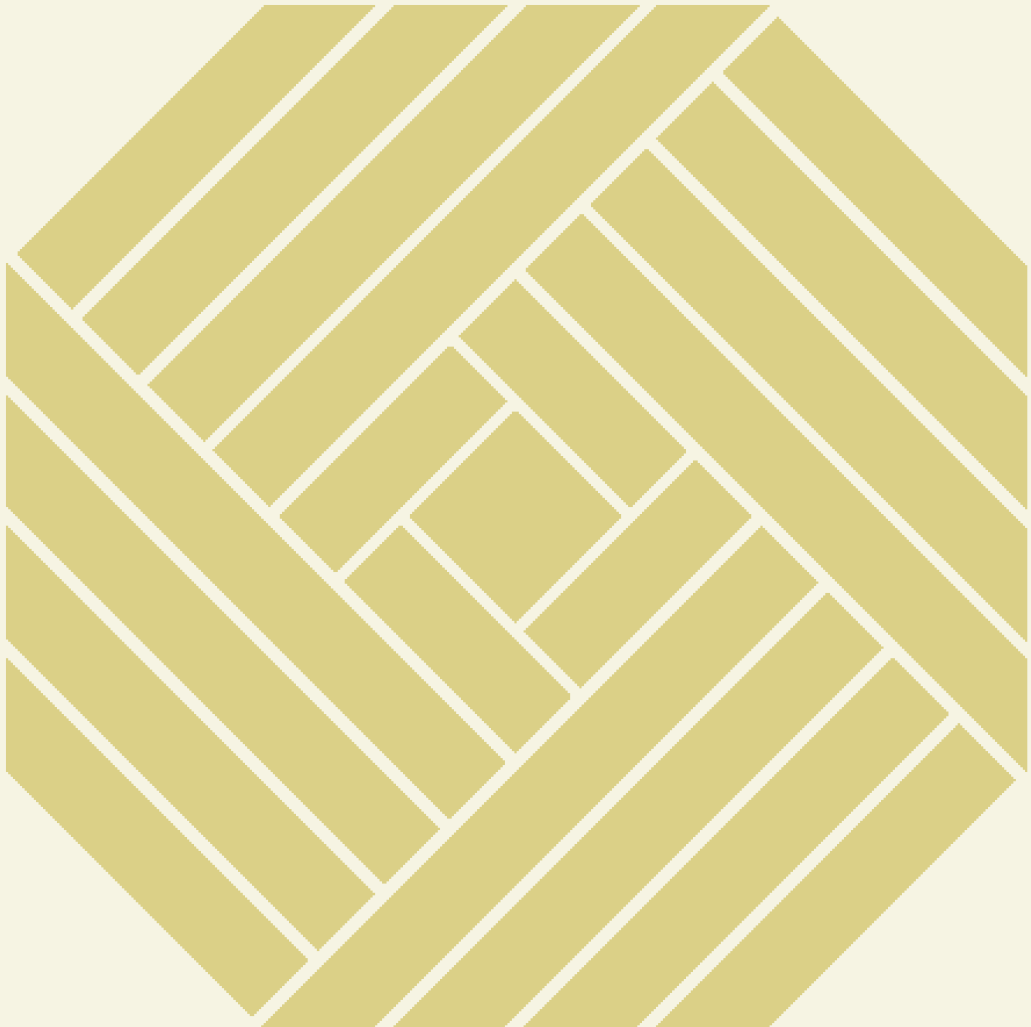


VOLUME 145 NUMBER 2 MARCH 2009

ISSN 0010-437X

COMPOSITIO MATHEMATICA



FOUNDATION COMPOSITIO MATHEMATICA

London Mathematical Society



COMPOSITIO MATHEMATICA

www.compositio.nl

Managing Editors:

S. J. Edixhoven
Mathematical Institute
University of Leiden
P. O. Box 9512
NL-2300 RA Leiden
The Netherlands

B. J. J. Moonen
Korteweg-de Vries Institute
University of Amsterdam
Plantage Muidergracht 24
NL-1018 TV Amsterdam
The Netherlands

B. J. Totaro
DPMMS
University of Cambridge
Wilberforce Road
Cambridge CB3 0WB
United Kingdom

Editorial Board:

D. Bar-Natan, *University of Toronto, ON, Canada*; **A. A. Beilinson**, *University of Chicago, IL, USA*; **M. Bhargava**, *Princeton University, NJ, USA*; **P. Biran**, *School of Mathematical Sciences, Tel-Aviv University, Israel*; **C. Breuil**, *Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France*; **J.-H. Evertse**, *University of Leiden, The Netherlands*; **G. Faltings**, *Max-Planck-Institut für Mathematik, Bonn, Germany*; **D. Gaitsgory**, *Harvard University, Cambridge, MA, USA*; **E. Getzler**, *Northwestern University, Evanston, IL, USA*; **A. J. De Jong**, *Columbia University, NY, USA*; **M. M. Kapranov**, *Yale University, CT, USA*; **B. Kleiner**, *Courant Institute of Mathematical Sciences, NY, USA*; **M. Kontsevich**, *Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France*; **E. Leichtnam**, *CNRS and Mathematics Institute of Chevaleret, Paris, France*; **F. Merkl**, *Ludwig-Maximilians-Universität München, Germany*; **S. Mori**, *Kyoto University, Japan*; **B. C. Ngô**, *Université Paris-Sud, Orsay, France*; **E. M. Opdam**, *University of Amsterdam, The Netherlands*; **P. Sarnak**, *Princeton University, NJ, USA*; **B. Siebert**, *Universität Hamburg, Germany*; **D. van Straten**, *Universität Mainz, Germany*; **Z. Szabó**, *Princeton University, NJ, USA*; **C. Voisin**, *Université Pierre et Marie Curie, Paris, France*; **L. Vrancken**, *Université de Valenciennes et du Hainaut-Cambrésis, Valenciennes, France*; **T. D. Wooley**, *University of Bristol, UK*.

Aims and Scope. The aim of *Compositio Mathematica* is to publish first-class mathematical research papers. By tradition the journal focuses on papers in the mainstream of pure mathematics. This includes the fields of algebra, number theory, topology, algebraic and analytic geometry and (geometric) analysis. Papers on other topics are welcome if they are of interest not only to specialists. All contributions are required to meet high standards of quality and originality and are carefully screened by experts in the field.

Compositio Mathematica (ISSN 0010-437X) is published bi-monthly in January, March, May, July, September and November as one annual volume of six parts by the London Mathematical Society and distributed by Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU, UK / Cambridge University Press, 32 Avenue of the Americas, New York, NY 10013-2473, USA. Periodicals postage paid at New York, NY and additional mailing offices. POSTMASTER: send address changes in the USA and Canada to *Compositio Mathematica*, Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133.

Subscriptions. The annual subscription rate for 2009 is €1200/£830 (USA, Canada and Mexico US\$1530). These prices include delivery by air and access to an online version. Single issues cost €200/£139 (USA, Canada and Mexico US\$255) plus postage.

Orders, which must be accompanied by payment, may be sent to any bookseller or subscription agent, or direct to Cambridge University Press at the UK address above, or in the USA, Canada or Mexico to Journals Fulfillment Department, 100 Brook Hill Drive, West Nyack, NY 10994-2133, USA. EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT-registered subscribers should provide their VAT registration number. Japanese prices for institutions are available from Kinokuniya Company Ltd, PO Box 55, Chitose, Tokyo 156, Japan.

© Foundation Compositio Mathematica. All rights reserved; no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Publishers or a licence permitting restricted copying in the UK by the Copyright Licensing Agency Ltd, 90 Tottenham Court Road, London W1P 9HE, or in the USA by the Copyright Clearance Center Inc., 222 Rosewood Drive, Danvers, MA 01923. Organisations in the USA that are also registered with the C.C.C. may copy material (beyond the limits permitted by sections 107 and 108 of U.S. copyright law) subject to payment to C.C.C. of the per-copy fee of \$16.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0010-437X/08 \$16.00.

Individual readers of this publication, and non-profit libraries acting for them, are permitted to make fair use of the material, such as to make a single copy of one article for use in teaching or research. Permission is also granted to quote brief passages from this publication in reviews, provided that the customary acknowledgement of the source is given.



COMPOSITIO MATHEMATICA

VOLUME 145 NUMBER 2 MARCH 2009

- Michael Drmota, Christian Mauduit and Joël Rivat** Primes with an average sum of digits 271–292
- Mirela Çiperiani** Tate–Shafarevich groups in anticyclotomic \mathbb{Z}_p -extensions at supersingular primes 293–308
- Jean-Louis Colliot-Thélène and Fei Xu** Brauer–Manin obstruction for integral points of homogeneous spaces and representation by integral quadratic forms 309–363
- Hugo Chapdelaine** p -units in ray class fields of real quadratic number fields 364–392
- Tommaso de Fernex and Christopher D. Hacon** Singularities on normal varieties 393–414
- Thomas Geisser** The affine part of the Picard scheme 415–422
- Benjamin Howard** Intersection theory on Shimura surfaces 423–475
- Nicolás Andruskiewitsch and Gastón Andrés García** Quantum subgroups of a simple quantum group at roots of one 476–500
- Zhengyu Mao and Stephen Rallis** A Plancherel formula for $\mathrm{Sp}_{2n}/\mathrm{Sp}_n \times \mathrm{Sp}_n$ and its application 501–527
- Nader Yeganefar** On manifolds with quadratic curvature decay 528–540

