
VOLUME 83 NUMBER 285



JANUARY 2014

MATHEMATICS OF COMPUTATION

A M E R I C A N M A T H E M A T I C A L S O C I E T Y

EDITED BY

Remi Abgrall
Susanne C. Brenner, *Managing Editor*
Daniela Calvetti
Zhiming Chen
Ronald F. A. Cools
Ricardo G. Duran
Vivette Girault
Nicholas I. M. Gould
Douglas Hardin
Fred J. Hickernell
Gregor Kemper
Boris N. Khoromskij
Stig Larsson
Christian Lubich
Gunter Malle
Michael J. Mossinghoff
Stanley Osher
Gilles Pagès
Cheryl E. Praeger
Renate Scheidler
Christoph Schwab
Jie Shen
Zuwei Shen
Igor E. Shparlinski
Chi-Wang Shu
Chris Smyth
Daniel B. Szyld
Mark van Hoeij
Hans Volkmer
Ya-xiang Yuan
Zhimin Zhang

PROVIDENCE, RHODE ISLAND USA

ISSN 0025-5718 (print)

ISSN 1088-6842 (online)

Available electronically at
www.ams.org/mcom/

MATHEMATICS OF COMPUTATION
CONTENTS

Vol. 83, No. 285

January 2014

Qun Lin, Hehu Xie, and Jinchao Xu, Lower bounds of the discretization error for piecewise polynomials	1
Johnny Guzmán and Michael Neilan, Conforming and divergence-free Stokes elements on general triangular meshes	15
Liyong Zhu and Qiang Du, Mesh dependent stability and condition number estimates for finite element approximations of parabolic problems	37
Bernardo Cockburn and Vincent Quenneville-Bélair, Uniform-in-time superconvergence of the HDG methods for the acoustic wave equation	65
Yanlai Chen and Bernardo Cockburn, Analysis of variable-degree HDG methods for convection-diffusion equations. Part II: Semimatching nonconforming meshes	87
Nune Hovhannisyan, Siegfried Müller, and Roland Schäfer, Adaptive multiresolution discontinuous Galerkin schemes for conservation laws ..	113
Clément Cancès, Iuliu Sorin Pop, and Martin Vohralík, An a posteriori error estimate for vertex-centered finite volume discretizations of immiscible incompressible two-phase flow	153
Olivier Verdier, Reductions of operator pencils	189
Gang Bao, Shui-Nee Chow, Peijun Li, and Haomin Zhou, An inverse random source problem for the Helmholtz equation	215
Hatem A. Fayed and Amir F. Atiya, An evaluation of the integral of the product of the error function and the normal probability density with application to the bivariate normal integral	235
Andreas Griewank, Lutz Lehmann, Hernan Leovey, and Marat Zilberman, Automatic evaluations of cross-derivatives	251
Marco Streng, Computing Igusa class polynomials	275
Jan Steffen Müller, Computing canonical heights using arithmetic intersection theory	311
Florian Luca and Filip Najman, Errata to “On the largest prime factor of $x^2 - 1$ ”	337
Edgar Costa and David Harvey, Faster deterministic integer factorization	339
Omran Ahmadi and Robert Granger, An efficient deterministic test for Kloosterman sum zeros	347
Brendan Creutz, Second p -descents on elliptic curves	365
Eric Errthum, Minimal polynomials of singular moduli	411
Yannick Saouter and Herman te Riele, Improved results on the Mertens conjecture	421

(Continued on inside back cover)



0025-5718(201401)83:285;1-Z

(Continued from back cover)

Javad Doliskani and Éric Schost , Taking roots over high extensions of finite fields	435
Mohammad Sadek , On elliptic curves whose conductor is a product of two prime powers	447
Eric Jespers, Ángel del Río, and Inneke Van Gelder , Writing units of integral group rings of finite abelian groups as a product of Bass units	461
Wenchang Chu and Wenlong Zhang , Accelerating Dougall's ${}_5F_4$ -sum and infinite series involving π	475