A MERICAN MATHEMATICAL SOCIETY

EDITORS<br>William Fulton<br>Benedict H. Gross<br>Andrew Odlyzko<br>Elias M. Stein<br>Clifford Taubes<br>ASSOCIATE EDITORS<br>James G. Arthur<br>Alexander Beilinson<br>Persi Diaconis<br>Michael J. Hopkins<br>Henryk Iwaniec<br>Sergio Klainerman<br>Robert Lazarsfeld<br>Dusa McDuff<br>Curtis T. McMullen<br>Marina Ratner<br>Richard Schoen<br>Richard Stanley<br>Gang Tian<br>W. Hugh Woodin

## Journal of the American Mathematical Society

This journal is devoted to research articles of the highest quality in all areas of pure and applied mathematics.

Submission information. See Information for Authors at the end of this issue.
Publisher Item Identifier. The Publisher Item Identifier (PII) appears at the top of the first page of each article published in this journal. This alphanumeric string of characters uniquely identifies each article and can be used for future cataloging, searching, and electronic retrieval.

Subscription information. The Journal of the American Mathematical Society is published quarterly. Beginning January 1996 the Journal of the American Mathematical Society is accessible from e-MATH via the World Wide Web at the URL http : //www.ams. org/publications/. Subscription prices for Volume 10 (1997) are as follows: for paper delivery, $\$ 184$ list, $\$ 147$ institutional member, $\$ 166$ corporate member, $\$ 110$ individual member; for electronic delivery, $\$ 166$ list, $\$ 133$ institutional member, $\$ 149$ corporate member, $\$ 100$ individual member; for combination paper and electronic delivery, $\$ 212$ list, $\$ 170$ institutional member, $\$ 191$ corporate member, $\$ 127$ individual member. If ordering the paper version, add $\$ 8$ for surface delivery outside the United States and India; $\$ 18$ to India. Expedited delivery to destinations in North America is $\$ 15$; elsewhere $\$ 36$. For paper delivery a late charge of $10 \%$ of the subscription price will be imposed upon orders received from nonmembers after January 1 of the subscription year.

Back number information. For back issues see the AMS Catalog of Publications.
Subscriptions and orders should be addressed to the American Mathematical Society, P.O. Box 5904, Boston, MA 02206-5904. All orders must be accompanied by payment. Other correspondence should be addressed to P.O. Box 6248, Providence, RI 02940-6248.

Copying and reprinting. Material in this journal may be reproduced by any means for educational and scientific purposes without fee or permission with the exception of reproduction by services that collect fees for delivery of documents and provided that the customary acknowledgment of the source is given. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, or for resale. Requests for permission for commercial use of material should be addressed to the Assistant to the Publisher, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. Requests can also be made by e-mail to reprint-permission@ams.org.

Excluded from these provisions is material in articles for which the author holds copyright. In such cases, requests for permission to use or reprint should be addressed directly to the author(s). (Copyright ownership is indicated in the notice in the lower right-hand corner of the first page of each article.)

The Journal of the American Mathematical Society is published quarterly by the American Mathematical Society at 201 Charles Street, Providence, RI 02904-2213 and is mailed from Providence, Rhode Island. Periodicals postage is paid at Providence, Rhode Island. Postmaster: Send address changes to Journal of the AMS, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248.
(C) 1997 by the American Mathematical Society. All rights reserved. This journal is indexed in Science Citation Index ${ }^{\circledR}$, SciSearch ${ }^{\circledR}$, Research Alert ${ }^{\circledR}$, CompuMath Citation Index ${ }^{\circledR}$, and Current Contents ${ }^{\circledR}$ / Physical, Chemical \& Earth Sciences. Printed in the United States of America.
(ब) The paper used in this journal is acid-free and falls within the guidelines established to ensure permanence and durability.

## INDEX TO VOLUME 10 (1997)

Alexander, H. Holomorphic chains and the support hypothesis conjecture, 123
Bendel, Christopher P. See Suslin, Andrei
Borichev, Alexander, and Hedenmalm, Håkan. Harmonic functions of maximal growth: Invertibility and cyclicity in Bergman spaces, 761
Borwein, Peter, and Erdélyi, Tamás. Generalizations of Müntz's Theorem via a Remez-type inequality for Müntz spaces, 327
Bourdon, Paul S., and Shapiro, Joel H. Mean growth of Koenigs eigenfunctions, 299
Brion, Michel, and Vergne, Michèle. Lattice points in simple polytopes, 371 . Residue formulae, vector partition functions and lattice points in rational polytopes, 797
Caporaso, Lucia, Harris, Joe, and Mazur, Barry. Uniformity of rational points, 1
Chanillo, Sagun, and Treves, François. Local exactness in a class of differential complexes, 393
Cooper, D., Long, D. D., and Reid, A. W. Essential closed surfaces in bounded 3-manifolds, 553
Deninger, Christopher. Deligne periods of mixed motives, $K$-theory and the entropy of certain $\mathbb{Z}^{n}$-actions, 259
Ein, Lawrence, and Lazarsfeld, Robert. Singularities of theta divisors and the birational geometry of irregular varieties, 243
Erdélyi, Tamás. See Borwein, Peter
Eskin, Alex, and Farb, Benson. Quasi-flats and rigidity in higher rank symmetric spaces, 653
Fan, C. Kenneth. Structure of a Hecke algebra quotient, 139
Farb, Benson. See Eskin, Alex
Fomin, Sergey, Gelfand, Sergei, and Postnikov, Alexander. Quantum Schubert polynomials, 565
Friedlander, Eric M. See Suslin, Andrei
Frohman, Charles, and Meeks, William H., III. The topological uniqueness of complete one-ended minimal surfaces and Heegaard surfaces in $\mathbb{R}^{3}, 495$
Gabai, David. On the geometric and topological rigidity of hyperbolic 3-manifolds, 37
Gelfand, Sergei. See Fomin, Sergey
Getzler, E. Intersection theory on $\overline{\mathcal{M}}_{1,4}$ and elliptic Gromov-Witten invariants, 973
Hain, Richard. Infinitesimal presentations of the Torelli groups, 597
Harris, Joe. See Caporaso, Lucia
Hedenmalm, Håkan. See Borichev, Alexander
Hosono, S., Lian, B. H., and Yau, S.-T. Maximal degeneracy points of GKZ systems, 427
Kashiwara, Masaki, and Schapira, Pierre. Integral transforms with exponential kernels and Laplace transform, 939
Kechris, Alexander S., and Louveau, Alain. The classification of hypersmooth Borel equivalence relations, 215
Lackenby, Marc. Dehn surgery on knots in 3-manifolds, 835
Lazarsfeld, Robert. See Ein, Lawrence
Lian, B. H. See Hosono, S.
Long, D. D. See Cooper, D.
Louveau, Alain. See Kechris, Alexander S.
Maslen, David K., and Rockmore, Daniel N. Separation of variables and the computation of Fourier transforms on finite groups, I, 169
Mazur, Barry. See Caporaso, Lucia
Meeks, William H., III. See Frohman, Charles
Pisier, Gilles. A polynomially bounded operator on Hilbert space which is not similar to a contraction, 351
Postnikov, Alexander. See Fomin, Sergey
Reid, A. W. See Cooper, D.
Ritter, Jürgen, and Weiss, Alfred. Cohomology of units and L-values at zero, 513
Rockmore, Daniel N. See Maslen, David K.
Saito, Takeshi, and Terasoma, Tomohide. Determinant of period integrals, 865
Schapira, Pierre. See Kashiwara, Masaki
Schlag, W. A generalization of Bourgain's circular maximal theorem, 103
Serre, Jean-Pierre. Répartition asymptotique des valeurs propres de l'opérateur de Hecke $T_{p}, 75$ Shapiro, Joel H. See Bourdon, Paul S.
Shepherd-Barron, N. I., and Taylor, R. Mod 2 and mod 5 icosahedral representations, 283

## INDEX TO VOLUME 10 (1997)

Suslin, Andrei, Friedlander, Eric M., and Bendel, Christopher P. Infinitesimal 1-parameter subgroups and cohomology, 693 . Support varieties for infinitesimal group schemes, 729
Taylor, R. See Shepherd-Barron, N. I.
Terasoma, Tomohide. See Saito, Takeshi
Totaro, Burt. Torsion algebraic cycles and complex cobordism, 467
Treves, François. See Chanillo, Sagun
Vergne, Michèle. See Brion, Michel
Volberg, A. Matrix $A_{p}$ weights via $S$-functions, 445
Weiss, Alfred. See Ritter, Jürgen
Yau, S.-T. See Hosono, S.

## JOURNAL

A M ERICAN MATHEMATICAR SOCIETY

## EDITORS

William Fulton
Benedict H. Gross
Andrew Odlyzko
Elias M. Stein
Clifford Taubes
ASSOCIATE EDITORS
James G. Arthur
Alexander Beilinson
Persi Diaconis
Michael J. Hopkins
Henryk Iwaniec
Sergio Klainerman
Robert Lazarsfeld
Dusa McDuff
Curtis T. McMullen
Marina Ratner
Richard Schoen
Richard Stanley
Gang Tian
W. Hugh Woodin

## Journal of the American Mathematical Society

This journal is devoted to research articles of the highest quality in all areas of pure and applied mathematics.

Submission information. See Information for Authors at the end of this issue.
Publisher Item Identifier. The Publisher Item Identifier (PII) appears at the top of the first page of each article published in this journal. This alphanumeric string of characters uniquely identifies each article and can be used for future cataloging, searching, and electronic retrieval.

Subscription information. The Journal of the American Mathematical Society is published quarterly. Beginning January 1996 the Journal of the American Mathematical Society is accessible from e-MATH via the World Wide Web at the URL http : //www.ams. org/publications/. Subscription prices for Volume 10 (1997) are as follows: for paper delivery, $\$ 184$ list, $\$ 147$ institutional member, $\$ 166$ corporate member, $\$ 110$ individual member; for electronic delivery, $\$ 166$ list, $\$ 133$ institutional member, $\$ 149$ corporate member, $\$ 100$ individual member; for combination paper and electronic delivery, $\$ 212$ list, $\$ 170$ institutional member, $\$ 191$ corporate member, $\$ 127$ individual member. If ordering the paper version, add $\$ 8$ for surface delivery outside the United States and India; $\$ 18$ to India. Expedited delivery to destinations in North America is $\$ 15$; elsewhere $\$ 36$. For paper delivery a late charge of $10 \%$ of the subscription price will be imposed upon orders received from nonmembers after January 1 of the subscription year.

Back number information. For back issues see the AMS Catalog of Publications.
Subscriptions and orders should be addressed to the American Mathematical Society, P.O. Box 5904, Boston, MA 02206-5904. All orders must be accompanied by payment. Other correspondence should be addressed to P.O. Box 6248, Providence, RI 02940-6248.

Copying and reprinting. Material in this journal may be reproduced by any means for educational and scientific purposes without fee or permission with the exception of reproduction by services that collect fees for delivery of documents and provided that the customary acknowledgment of the source is given. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, or for resale. Requests for permission for commercial use of material should be addressed to the Assistant to the Publisher, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. Requests can also be made by e-mail to reprint-permission@ams.org.

Excluded from these provisions is material in articles for which the author holds copyright. In such cases, requests for permission to use or reprint should be addressed directly to the author(s). (Copyright ownership is indicated in the notice in the lower right-hand corner of the first page of each article.)

The Journal of the American Mathematical Society is published quarterly by the American Mathematical Society at 201 Charles Street, Providence, RI 02904-2213 and is mailed from Providence, Rhode Island. Periodicals postage is paid at Providence, Rhode Island. Postmaster: Send address changes to Journal of the AMS, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248.
(C) 1997 by the American Mathematical Society. All rights reserved. This journal is indexed in Science Citation Index ${ }^{\circledR}$, SciSearch ${ }^{\circledR}$, Research Alert ${ }^{\circledR}$, CompuMath Citation Index ${ }^{\circledR}$, and Current Contents ${ }^{\circledR}$ / Physical, Chemical \& Earth Sciences. Printed in the United States of America.
(ब) The paper used in this journal is acid-free and falls within the guidelines established to ensure permanence and durability.

# JOURNAL OF THE AMERICAN MATHEMATICAL SOCIETY CONTENTS 

Vol. 10, No. 1
January 1997
Lucia Caporaso, Joe Harris, and Barry Mazur, Uniformity of rational points ..... 1
David Gabai, On the geometric and topological rigidity of hyperbolic 3- manifolds ..... 37
Jean-Pierre Serre, Répartition asymptotique des valeurs propres de l'opérateur de Hecke $T_{p}$ ..... 75
W. Schlag, A generalization of Bourgain's circular maximal theorem ..... 103
H. Alexander, Holomorphic chains and the support hypothesis conjecture ..... 123
C. Kenneth Fan, Structure of a Hecke algebra quotient ..... 139
David K. Maslen and Daniel N. Rockmore, Separation of variables and the computation of Fourier transforms on finite groups, I ..... 169
Alexander S. Kechris and Alain Louveau, The classification of hypersmooth Borel equivalence relations ..... 215
Lawrence Ein and Robert Lazarsfeld, Singularities of theta divisors and the birational geometry of irregular varieties ..... 243
Vol. 10, No. 2 April 1997
Christopher Deninger, Deligne periods of mixed motives, $K$-theory and the entropy of certain $\mathbb{Z}^{n}$-actions ..... 259
N. I. Shepherd-Barron and R. Taylor, Mod 2 and mod 5 icosahedral representations ..... 283
Paul S. Bourdon and Joel H. Shapiro, Mean growth of Koenigs eigenfunctions ..... 299
Peter Borwein and Tamás Erdélyi, Generalizations of Müntz's Theorem via a Remez-type inequality for Müntz spaces ..... 327
Gilles Pisier, A polynomially bounded operator on Hilbert space which is not similar to a contraction ..... 351
Michel Brion and Michèle Vergne, Lattice points in simple polytopes ..... 371
Sagun Chanillo and François Treves, Local exactness in a class of differential complexes ..... 393
S. Hosono, B. H. Lian, and S.-T. Yau, Maximal degeneracy points of GKZ systems ..... 427
A. Volberg, Matrix $A_{p}$ weights via $S$-functions ..... 445
Burt Totaro, Torsion algebraic cycles and complex cobordism ..... 467
Charles Frohman and William H. Meeks III, The topological uniqueness of complete one-ended minimal surfaces and Heegaard surfaces in $\mathbb{R}^{3}$ ..... 495
Jürgen Ritter and Alfred Weiss, Cohomology of units and $L$-values at zero ..... 513
D. Cooper, D. D. Long, and A. W. Reid, Essential closed surfaces in bounded 3-manifolds ..... 553
Sergey Fomin, Sergei Gelfand, and Alexander Postnikov, Quantum Schubert polynomials ..... 565
Richard Hain, Infinitesimal presentations of the Torelli groups ..... 597
Alex Eskin and Benson Farb, Quasi-flats and rigidity in higher rank symmetric spaces ..... 653
Andrei Suslin, Eric M. Friedlander, and Christopher P. Bendel, Infinitesimal 1-parameter subgroups and cohomology ..... 693
Andrei Suslin, Eric M. Friedlander, and Christopher P. Bendel, Support varieties for infinitesimal group schemes ..... 729
Vol. 10, No. 4October 1997
Alexander Borichev and Håkan Hedenmalm, Harmonic functions of maximal growth: Invertibility and cyclicity in Bergman spaces ..... 761
Michel Brion and Michèle Vergne, Residue formulae, vector partition functions and lattice points in rational polytopes ..... 797
Marc Lackenby, Dehn surgery on knots in 3-manifolds ..... 835
Takeshi Saito and Tomohide Terasoma, Determinant of period integrals ..... 865
Masaki Kashiwara and Pierre Schapira, Integral transforms with exponential kernels and Laplace transform ..... 939
E. Getzler, Intersection theory on $\overline{\mathcal{M}}_{1,4}$ and elliptic Gromov-Witten invariants ..... 973

## Editors

William Fulton<br>Department of Mathematics<br>University of Chicago<br>5734 University Avenue<br>Chicago, IL 60637-1514<br>fulton@math.uchicago.edu

Benedict H. Gross
Department of Mathematics
Harvard University
Cambridge, MA 02138-2901
gross@math.harvard.edu
Andrew Odlyzko
AT \& T Bell Laboratories-Research
Room C225
180 Park Ave., Bldg. 103
P.O. Box 971

Florham Park, NJ 07932-0971
amo@research.att.com

Elias M. Stein
Department of Mathematics
Princeton University
Princeton, NJ 08544-1000
stein@math.princeton.edu
Clifford Taubes
Department of Mathematics
Harvard University
Cambridge, MA 02138-2901
chtaubes@math.harvard.edu

Associate Editors

James G. Arthur, University of Toronto
Alexander Beilinson, Massachusetts Institute of Technology Persi Diaconis, Harvard University
Michael J. Hopkins, Massachusetts Institute of Technology Henryk Iwaniec, Rutgers University
Sergio Klainerman, Princeton University
Robert Lazarsfeld, University of California, Los Angeles
Dusa McDuff, SUNY at Stony Brook
Curtis T. McMullen, University of California, Berkeley
Marina Ratner, University of California, Berkeley Richard Schoen, Stanford University
Richard Stanley, Massachusetts Institute of Technology
Gang Tian, Massachusetts Institute of Technology
W. Hugh Woodin, University of California, Berkeley

Assistant to the Editorial Board
Laurie Talbo
Department of Mathematics
University of Chicago
Chicago, IL 60637-1514
laurie@math.uchicago.edu

## Editorial Information

As of June 30, 1997, the backlog for this journal was approximately 0 issues. This estimate is the result of dividing the number of manuscripts for this journal in the Providence office that have not yet gone to the printer on the above date by the average number of articles per issue over the previous twelve months, reduced by the number of issues published in four months (the time necessary for editing and composing a typical issue).

A Consent to Publish and Copyright Agreement is required before a paper will be published in this journal. After a paper is accepted for publication, the Providence office will send a Consent to Publish and Copyright Agreement to all authors of the paper. By submitting a paper to this journal, authors certify that the manuscript has not been submitted to nor is it under consideration for publication by another journal, conference proceedings, or similar publication.

## Information for Authors

Initial submission. Two copies of the paper should be sent directly to one of the Editors and the author should keep one copy.

The first page must contain a descriptive title that is short, but informative; useless or vague phrases such as "some remarks about" or "concerning" should be avoided. Although an abstract is not required upon initial submission, upon acceptance authors will be requested to supply an abstract for the electronic version of this journal. The AMS offers free worldwide access to the electronic abstracts. An abstract should be at least one complete sentence and at most 300 words. No abstracts will appear in the printed journal starting in 1998. Included with the footnotes to the paper, there should be the 1991 Mathematics Subject Classification representing the primary and secondary subjects of the article. This may be followed by a list of key words and phrases describing the subject matter of the article and taken from it. A list of classifications may be found in the annual index of Mathematical Reviews, published with the December issue starting in 1990. Journal abbreviations used in bibliographies are also listed in the latest Mathematical Reviews annual index. The classifications and the journal abbreviations are accessible from e-MATH via the World Wide Web through the URL http://www.ams.org/committee/publications/mr-info.html or via FTP to e-math.ams.org (login as anonymous and enter username as password). The classifications are available as a browsable list, and the journal abbreviations are available through a search tool. When the manuscript is submitted, authors should supply the editor with electronic addresses if available. These will be printed after the postal address at the end of each article.

Electronically prepared manuscripts. The AMS encourages electronically prepared manuscripts, with a strong preference for $\mathcal{A} \mathcal{M} \mathcal{S}$ - $\mathrm{ET} \mathrm{T}_{\mathrm{E}} \mathrm{X}$. To this end, the Society has prepared $\mathcal{A}_{\mathcal{M}} \mathcal{S}$ - $\mathrm{EAT} \mathrm{T}_{\mathrm{E}}$ author packages for each AMS publication. Author packages include instructions for preparing electronic manuscripts, the AMS Author Handbook, samples, and a style file that generates the particular design specifications of that publication series. Articles properly prepared using the $\mathcal{A} \mathcal{M} \mathcal{S}$ - $-\mathrm{EA}_{\mathrm{E}} \mathrm{X}$ style file automatically provide hypertext linking to the bibliography and other elements of the article for searching electronically on the World Wide Web. Because linking must often be added manually to electronically prepared manuscripts in other forms of $\mathrm{T}_{\mathrm{E}}$, using $\mathcal{A} \mathcal{M} \mathcal{S}$ - $\mathrm{EAT}_{\mathrm{E} \mathrm{X}}$ also reduces the amount of technical intervention once the files are received by the AMS. This results in fewer errors in processing and saves the author proofreading time. $\mathcal{A}_{\mathcal{M} \mathcal{S}}$ - ${ }^{\mathrm{E}} \mathrm{T}_{\mathrm{E}} \mathrm{X}$ papers also move more efficiently through the production stream, helping to minimize publishing costs.
$\mathcal{A}_{\mathcal{M}} \mathcal{S}-\mathrm{EAT}_{\mathrm{E}} \mathrm{X}$ is the highly preferred format of $\mathrm{T}_{\mathrm{E}} \mathrm{X}$, but author packages are also available in $\mathcal{A} \mathcal{M} \mathcal{S}-\mathrm{T}_{\mathrm{E}} \mathrm{X}$. Those authors who make use of these style files from the beginning of the writing process will further reduce their own efforts. Manuscripts prepared electronically in $\mathrm{LA}_{\mathrm{E}} \mathrm{X}$ or plain $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ are normally not acceptable due to the high amount of technical time required to insure that the file will run properly
through the AMS in-house production system. $\mathrm{ET}_{\mathrm{E}} \mathrm{X}$ users will find that $\mathcal{A}_{\mathcal{M}} \mathcal{S}$ ${ }^{A} T_{E} \mathrm{X}$ is the same as $\mathrm{IAT}_{E} \mathrm{X}$ with additional commands to simplify the typesetting of mathematics, and users of plain $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ should have the foundation for learning $\mathcal{A}_{\mathcal{M}} \mathcal{S}$ - ${ }^{\mathrm{E} T} \mathrm{~T}_{\mathrm{E}} \mathrm{X}$.

Authors may retrieve an author package from e-MATH via the World Wide Web through the URL http : //www.ams.org/tex/ or via FTP to e-math.ams.org (login as anonymous and enter username as password). The author package can also be obtained free of charge by sending e-mail to pub@ams.org (Internet) or from the Publication Division, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. When requesting an author package, please specify $\mathcal{A} \mathcal{M} \mathcal{S}$-EATEX or $\mathcal{A} \mathcal{M} \mathcal{S}-\mathrm{T}_{\mathrm{E}} \mathrm{X}$, Macintosh or IBM (3.5) format, and the publication in which your paper will appear. Please be sure to include your complete mailing address.

At the time of submission, authors should indicate if the paper has been prepared using $\mathcal{A}_{\mathcal{M}} \mathcal{S}$ - ${ }^{\mathrm{E}} \mathrm{T}_{\mathrm{E}}$ or $\mathcal{A}_{\mathcal{M}} \mathcal{S}$ - $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ and provide the Editor with a paper manuscript that matches the electronic manuscript. The final version of the electronic manuscript should be sent to the Providence office immediately after the paper has been accepted for publication. The author should also send the final version of the paper manuscript to the Editor, who will forward a copy to the Providence office. Editors will require authors to send their electronically prepared manuscripts to the Providence office in a timely fashion. Electronically prepared manuscripts can be sent via e-mail to pub-submit@ams.org (Internet) or on diskette to the Electronic Prepress Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. When sending a manuscript electronically, please be sure to include a message indicating in which publication the paper has been accepted. No corrections will be accepted electronically. Authors must mark their changes on their proof copies and return them to the Providence office. Complete instructions on how to send files are included in the author package.

Electronic graphics. Figures may be sent to the AMS in an electronic format. The AMS recommends that graphics created electronically be saved in Encapsulated PostScript (EPS) format. This includes graphics originated via a graphics application as well as scanned photographs or other computer-generated images.

If the graphics package used does not support EPS output, the graphics file should be saved in one of the standard graphics formats-such as TIFF, PICT, GIF, etc.-rather than in an application-dependent format. Graphics files sent in an application-dependent format are not likely to be used. No matter what method was used to produce the graphic, it is necessary to provide a paper copy to the AMS.

Authors using graphics packages for the creation of electronic art should also avoid the use of any lines thinner than 0.5 points in width. Many graphics packages allow the user to specify a "hairline" for a very thin line. Hairlines often look acceptable when proofed on a typical laser printer. However, when produced on a high-resolution laser imagesetter, hairlines become nearly invisible and will be lost entirely in the final printing process.

Screens should be set to values between $15 \%$ and $85 \%$. Screens which fall outside of this range are too light or too dark to print correctly.
$\mathbf{T}_{\mathbf{E}} \mathbf{X}$ files available. Beginning with the January 1992 issue of the Bulletin and the January 1996 issues of Transactions, Proceedings, Mathematics of Computation, and the Journal of the AMS, $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ files can be downloaded from e-MATH, starting from URL http://www.ams.org/journals/. Authors without Web access may request their files at the address given below after the article has been published. For Bulletin papers published in 1987 through 1991 and for Transactions, Proceedings,

Mathematics of Computation, and the Journal of the AMS papers published in 1987 through 1995, $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ files are available upon request for authors without Web access by sending e-mail to file-request@ams.org or by contacting the Electronic Prepress Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. The request should include the title of the paper, the name(s) of the author(s), the name of the publication in which the paper has or will appear, and the volume and issue numbers if known. The $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ file will be sent to the author making the request after the article goes to the printer. If the requestor can receive Internet e-mail, please include the e-mail address to which the file should be sent. Otherwise please indicate a diskette format and postal address to which a disk should be mailed. Note: Because $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ production at the AMS sometimes requires extra fonts and macros that are not yet publicly available, $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ files cannot be guaranteed to run through the author's version of $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ without errors. The AMS regrets that it cannot provide support to eliminate such errors in the author's $\mathrm{T}_{\mathrm{E}} \mathrm{X}$ environment.

Any inquiries concerning a paper that has been accepted for publication should be sent directly to the Electronic Prepress Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248.

# JOURNAL OF THE AMERICAN MATHEMATICAL SOCIETY CONTENTS 

Vol. 10, No. 4
October 1997
Alexander Borichev and Håkan Hedenmalm, Harmonic functions of maximal growth: Invertibility and cyclicity in Bergman spaces ..... 761
Michel Brion and Michèle Vergne, Residue formulae, vector partition functions and lattice points in rational polytopes ..... 797
Marc Lackenby, Dehn surgery on knots in 3-manifolds ..... 835
Takeshi Saito and Tomohide Terasoma, Determinant of period integrals ..... 865
Masaki Kashiwara and Pierre Schapira, Integral transforms with exponential kernels and Laplace transform ..... 939
E. Getzler, Intersection theory on $\overline{\mathcal{M}}_{1,4}$ and elliptic Gromov-Witten invariants ..... 973

