

Communications in
**Mathematical
Physics**

Volume 145 1992

Chief Editor A. Jaffe, Cambridge, MA

Editorial Board M. Aizenman, Princeton, NJ
H. Araki, Kyoto
A. Connes, Bures-sur-Yvette
J.-P. Eckmann, Genève
M. E. Fisher, College Park, MD
J. Fröhlich, Zürich
K. Gawedzki, Bures-sur-Yvette
M. Herman, Palaiseau
J. L. Lebowitz, New Brunswick, NJ
N. Yu. Reshetikhin, Berkeley, CA
B. Simon, Pasadena, CA
Ya. G. Sinai, Moscow
T. Spencer, Princeton, NJ
S.-T. Yau, Taiwan

Advisory Board M. F. Atiyah, Oxford
F. Hirzebruch, Bonn
G. 't Hooft, Utrecht
R. Schrieffer, Santa Barbara, CA
I. Singer, Cambridge, MA
C. N. Yang, Stony Brook, NY



Springer International

Copyright

Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that it is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders.

All articles published in this journal are protected by copyright, which covers the exclusive rights to reproduce and distribute the article (e. g., as offprints), as well as all translation rights. No material published in this journal may be reproduced photographically or stored on microfilm, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher.

The use of general descriptive names, trade names, trademarks, etc., in this publication, even if not specifically identified, does not imply that these names are not protected by the relevant laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of its going to press, neither the authors, the editors, nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for photocopies in the USA:

Photocopies may be made for personal or in-house use beyond the limitations stipulated under Section 107 or 108 of U.S. Copyright Law, provided a fee is paid. This fee is US \$ 0.20 per copy, plus a basic fee of US \$ 2.00 per article. All fees should be paid to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0010-3616, the volume, and the first and last page numbers of each article copied. The copyright owner's consent does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must first be obtained from the publisher.

Springer-Verlag Berlin Heidelberg New York Tokyo Hong Kong Barcelona Budapest
Printers: Brühlsche Universitätsdruckerei, Giessen
Printed in Germany — © Springer-Verlag Berlin Heidelberg 1992
Springer-Verlag GmbH & Co KG, 1000 Berlin 33, Federal Republic of Germany

Contents

- Bor, G.: Yang-Mills Fields which are not Self-Dual 393
- Borgs, Ch., Imbrie, J. Z.: Finite-Size Scaling and Surface Tension from Effective One Dimensional Systems 235
- Bouwknegt, P., McCarthy, J., Pilch, K.: BRST Analysis of Physical States for 2D Gravity Coupled to $e \leq 1$ Matter 541
- Chang, C.-C., Yau, H.-T.: Fluctuations of One Dimensional Ginzburg-Landau Models in Nonequilibrium 209
- Collet, P., Eckmann, J.-P.: Solutions Without Phase-Slip for the Ginsburg-Landau Equation 345
- Degiovanni, P.: Moore and Seiberg's Equations and 3D Topological Field Theory 459
- Dickey, L. A.: General Zakharov-Shabat Equations, Multi-Time Hamiltonian Formalism, and Constants of Motion (*Erratum*) 635
- Dubrovin, B. A.: Hamiltonian Formalism of Whitham-Type Hierarchies and Topological Landau-Ginsburg Models 195
- Eckmann, J.-P. → Collet, P. 345
- Figueroa-O'Farrill, J. M., Ramos, E.: Classical $N = 1$ W -Superalgebras from Hamiltonian Reduction 43
- Gato-Rivera, B., Schellekens, A. N.: Complete Classification of Simple Current Modular Invariants for RCFT's with a Center $(Z_p)^k$ 85
- Gérard, C., Sigal, I. M.: Space-Time Picture of Semiclassical Resonances 281
- Goldsheid, I. Ya., Sorets, E.: Lyapunov Exponents of the Schrödinger Equation with Quasi-Periodic Potential on a Strip 507
- Groot, M. F. de, Hollowood, T. J., Miramontes, J. L.: Generalized Drinfel'd-Sokolov Hierarchies 57
- Hollowood, T. J. → Groot, M. F. de 57
- Imbrie, J. Z. → Borgs, Ch. 235
- Khesin, B. A., Shapiro, B. Z.: Nondegenerate Curves on S^2 and Orbit Classification of the Zamolodchikov Algebra 357
- Killingback, T. P.: Quantization of $SL(2, \mathbb{R})$ Chern-Simons Theory 1
- Laederich, S.: $\bar{\partial}$ -Torsion, Foliations and Holomorphic Vector Fields 447
- Lian, B. H., Zuckerman, G. J.: Semi-Infinite Homology and 2D Gravity. I 561
- Markarian, R.: Ergodic Properties of Plane Billiards with Symmetric Potentials 435
- McCarthy, J. → Bouwknegt, P. 541
- Miramontes, J. L. → Groot, M. F. de 57
- Nieuwenhuizen, P. van → Ooguri, H. 515
- Nilsson, B. E. W., West, P.: String Vertices, Overlap Equations, τ Functions and the Hirota Equation 329
- Ooguri, H., Schoutens, K., Sevrin, A., Nieuwenhuizen, P. van: The Induced Action of W_3 Gravity 515
- Pilch, K. → Bouwknegt, P. 541
- Ramos, E. → Figueroa-O'Farrill, J. M. 43
- Rehren, K.-H.: Field Operators for Anyons and Plektons 123
- Roan, S.-S.: A Characterization of "Rapidity" Curve in the Chiral Potts Model 605
- Sadun, L., Segert, J.: Non-Self-Dual Yang-Mills Connections with Quadrupole Symmetry 363
- Samols, T. M.: Vortex Scattering 149
- Sauvageot, J.-L., Thouvenot, J.-P.: Une nouvelle définition de l'entropie dynamique des systèmes non commutatifs 411

IV

Schellekens, A. N. → Gato-Rivera, B. 85
Schoutens, K. → Ooguri, H. 515
Segert, J. → Sadun, L. 363
Sevrin, A. → Ooguri, H. 515
Shapiro, B. Z. → Khesin, B. A. 357
Sigal, I. M. → Gérard, C. 281
Sorets, E. → Goldsheid, I. Ya. 507
Szász, D.: On the K -Property of Some Planar
Hyperbolic Billiards 595

Thouvenot, J.-P. → Sauvageot, J.-L. 411

Veselov, A. P.: Growth and Integrability in the
Dynamics of Mappings 181

Weitsman, J.: Real Polarization of the Moduli
Space of Flat Connections on a Riemann
Surface 425

West, P. → Nilsson, B. E. W. 329

Wiesbrock, H.-W.: The Construction of the sh-
Lie-Algebra of Closed Bosonic Strings 17

Yau, H.-T. → Chang, C.-C. 209

Zuckerman, G. J. → Lian, B. H. 561

Indexed in *Current Contents*

Evaluated and abstracted for *PHYS* on *STN*

Communications in Mathematical Physics

Volume 145 Number 1 1992

- | | | |
|---|--|-----|
| T. P. Killingback | Quantization of $SL(2, \mathbb{R})$ Chern—Simons Theory | 1 |
| H.-W. Wiesbrock | The Construction of the sh-Lie-Algebra of Closed Bosonic Strings | 17 |
| J. M. Figueroa-O'Farrill,
E. Ramos | Classical $N = 1$ W -Superalgebras from Hamiltonian Reduction | 43 |
| M. F. de Groot,
T. J. Hollowood,
J. L. Miramontes | Generalized Drinfel'd-Sokolov Hierarchies | 57 |
| B. Gato-Rivera,
A. N. Schellekens | Complete Classification of Simple Current Modular Invariants for RCFT's with a Center $(\mathbb{Z}_p)^k$ | 85 |
| K.-H. Rehren | Field Operators for Anyons and Plektons | 123 |
| T. M. Samols | Vortex Scattering | 149 |
| A. P. Veselov | Growth and Integrability in the Dynamics of Mappings | 181 |
| B. A. Dubrovin | Hamiltonian Formalism of Whitham-Type Hierarchies and Topological Landau-Ginsburg Models | 195 |

Indexed in *Current Contents*

Evaluated and abstracted for *PHYS* on *STN*



Springer International

220 Commun. Math. Phys.
ISSN 0010-3616 CMPHAY 145 (1) 1—208 (1992)
Printed on acid-free paper

March (I) 1992

Acta Informatica

Archive for
Mathematical Logic

Communications in
Mathematical Physics

Economic Theory
Inventiones mathematicae

Journal of
Mathematical Biology
Mathematische Annalen
Mathematische Zeitschrift

Numerische Mathematik
Probability Theory
and Related Fields

Theoretica Chimica Acta
Acta Informatica

Archive for
Mathematical Logic

Communications in
Mathematical Physics
Economic Theory
Inventiones mathematicae

Journal of
Mathematical Biology
Mathematische Annalen
Mathematische Zeitschrift

T_EX users do it with Springer macros

If you are used to preparing your manuscripts with plain-T_EX, you may be interested to hear that we have created a macro package for the layout of the journals listed here.

Articles may now be submitted as plain-T_EX files using our macros. They will be phototypeset directly from your T_EX-file, thus cutting down proofreading and publishing times.

The macros plus AMS fonts are available on 3.5" DOS diskettes and are free of charge.

Please order your copy by writing to



Springer-Verlag
Journal Production
Post Box 10 52 80
W-6900 Heidelberg, FRG

e-mail: Springer @dhdspr16.bitnet

An e-mail to svserv@dhdspr16 containing *help* will provide you with info on our **mailserver**.

**Please do not forget to indicate
the journal for which you
are intending to submit your
manuscript.**

L^AT_EX stylefiles are in preparation.