Communications in

Mathematical Physics

Volume 166 1995

Chief Editor A. Jaffe, Cambridge, MA

Editorial Board H. Araki, Kyoto

D. Brydges, Charlottesville, VA
A. Connes, Bures-sur-Yvette
R. Dijkgraaf, Amsterdam
J.-P. Eckmann, Genève
G. Felder, Chapel Hill, NC

M. E. Fisher, College Park, MD

M. Herman, Palaiseau M. Jimbo, Kyoto A. Kupiainen, Helsinki

J. L. Lebowitz, New Brunswick, NJ

B. Simon, Pasadena, CA Ya. G. Sinai, Princeton, NJ S.-T. Yau, Cambridge, MA

Advisory Board M. F. Atiyah, Oxford

L. Faddeev, St. Petersburg

F. Hirzebruch, Bonn

R. Schrieffer, Santa Barbara, CA I. Singer, Cambridge, MA C. N. Yang, Stony Brook, NY



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publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders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, wich 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 publikation, 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 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.

The Canada Institute for Scientific and Technical Information (CISTI) provides a comprehensive, worldwide document delivery service for all Springer-Verlag journals For more information, or to place an order for a copyright-cleared Springer-Verlag document, please contact Client Assistant, Document Delivery, Canada Institute for Scientific and Technical Information, Ottawa K1A 0S2, Canada (Tel: 613-993-9251; Fax: 613-952-8243; e-mail: cisti docdel@nrc ca)

Springer-Verlag Berlin Heidelberg New York Tokyo Hong Kong Barcelona Budapest

Printers: Saladruck, Berlin

Printed in Germany - © Springer-Verlag Berlin Heidelberg 1995

Springer-Verlag GmbH & Co KG, Berlin, Germany

Contents

- Abdalla, E., Abdalla, M. C. B., Brunelli, J. C., Zadra, A.: The Algebra of Non-Local Charges in Non-Linear Sigma Models 379
- Abdalla, M. C. B. → Abdalla, E. 379 Alber, H. D.: Global Existence and Boundedness of Large Solutions to Nonlinear Equations of Viscoelasticity with Hardening 565
- Baladi, V., Young, L.-S.: On the Spectra of Randomly Perturbed Expanding Maps (*Erratum*) 219
- Bourgain, J.: Periodic Nonlinear Schrödinger Equation and Invariant Measures 1
- Borthwick, D., Klimek, S., Lesniewski, A., Rinaldi, M.: Supersymmetry and Fredholm Modules Over Quantized Spaces 397
- Bovier, A., Ghez, J.-M.: Spectral Properties of One-Dimensional Schrödinger Operators with Potentials Generated by Substitutions (*Erratum*) 431
- Brunelli, J. C. → Abdalla, E. 379
- Caprino, S., Pulvirenti, M.: A Cluster Expansion Approach to a One-Dimensional Boltzmann Equation: A Validity Result 603
- Chanillo, S., Li, Y.: On Diameters of Uniformly Rotating Stars 417
- Cogburn, R., Ellison, J. A.: A Four-Thirds Law for Phase Randomization of Stochastically Perturbed Oscillators and Related Phenomena 317
- Comets, F., Neveu, J.: The Sherrington-Kirkpatrick Model of Spin Glasses and Stochastic Calculus: The High Temperature Case 549
- Dwivedi, I. H, Joshi, P. S.: On the Occurrence of Naked Singularity in Spherically Symmetric Gravitational Collapse 117

- Ellison, J. A. \rightarrow Cogburn, R. 317
- Feigin, B., Frenkel, E., Reshetikhin, N.:
 Gaudin Model, Bethe Ansatz and Critical
 Level 27
- Frittelli, S., Reula, O.: On the Newtonian Limit of General Relativity 221 Frenkel, E. → Feigin, B 27
- Ghez, J.-M. → Bovier, A. 431
 Grecchi, V., Martinez, A.: Non-Linear Stark
 Effect and Molecular Localization 533
 Grotta Ragazzo, C: Nonintegrability of
 Some Hamiltonian Systems, Scattering
 and Analytic Continuation 255
- Harnad, J.: Dual Isomonodromic Deformations and Moment Maps to Loop Algebras 337
- Heilig, U.: On the Existence of Rotating Stars in General Relativity 457
- Joshi, P. S. → Dwivedi, I. H 117 Jurčo, B.: More on Quantum Groups from the Quantization Point of View 63
- Kargol, A.: The Infinite Time Limit for the Time-Dependent Born – Oppenheimer Approximation 129
- Kastler, D.: The Dirac Operator and Gravitation 633
- Klimek, S. → Borthwick, D. 397
- Lesniewski, A. → Borthwick, D. 397 Li, Y. → Chanillo, S. 417
- Martinez, A. → Grecchi, V. 533
 Mason, L. J., Singer, M. A.: The Twistor Theory of Equations of KdV
 Type: I 191
- Neveu, J. \rightarrow Comets, F. 549

Palev, T. D., Stoilova, N. I., Van der Jeugt, J.: Finite-Dimensional Representations of the Quantum Superalgebra $U_q[gl(n/m)]$ and Related q-Identities 367

Paycha, S.: Elliptic Operators in the Functional Quantisation for Gauge Field Theories 433

Pflaum, M. J.: Quantum Groups on Fibre Bundles 279

Pulvirenti, M. → Caprino, S. 603

Reula, O. → Frittelli, S. 221 Reshetikhin, N. → Feigin, B. 27 Rinaldi, M. → Borthwick, D. 397

Singer, M. A. → Mason, L. J. 191 Stoilova, N. I. → Palev, T. D. 367 Stuart, D.: The Geodesic Approximation for the Yang – Mills – Higgs Equations 149 Tian, F. R.: The Initial Value Problem for the Whitham Averaged System 79
Tuite, M. P.: On the Relationship Between Monstrous Moonshine and the Uniqueness of the Moonshine Module 495

Van der Jeugt, J. → Palev, T. D. 367

Xu, F.: Orbifold Construction in Subfactors 237

Young, L -S. → Baladi, V. 219

Zadra, A. → Abdalla, E 379

Indexed in Current Contents
Evaluated and abstracted for PHYS on STN

Mathematical Physics

Volume 166 Number 3 1995

S. Paycha	Elliptic Operators in the Functional Quantisation
	for Gauge Field Theories 433

- U. Heilig On the Existence of Rotating Stars in General Relativity 457
- M. P. Tuite On the Relationship Between Monstrous Moonshine and the Uniqueness of the Moonshine Module 495
- V. Grecchi, A. Martinez Non-linear Stark Effect and Molecular Localization 533
 - F. Comets, J. Neveu The Sherrington-Kirkpatrick Model of Spin Glasses and Stochastic Calculus: The High Temperature Case 549
 - H. D. Alber Global Existence and Boundedness of Large Solutions to Nonlinear Equations of Viscoelasticity with Hardening 565
- S. Caprino, M. Pulvirenti A Cluster Expansion Approach to a One-Dimensional Boltzmann Equation: A Validity Result 603
 - D. Kastler The Dirac Operator and Gravitation 633 Contents of Volume 166

Indexed in *Current Contents*Evaluated and abstracted for *PHYS* on *STN*CMPHAY 166 (3) 433–644
January (I) 1995





Springer LATEX and plain-TEX macros

We can use your T_EX files directly for phototypesetting if you have used our macros. Makropackages are available for the following journals:

Llour1

IATEX styles for Acta Informatica, Applicable Algebra in Engineering, Communication and Computing, Archive for Mathematical Logic, Astronomy & Astrophysics Reviews. Calculus of Variations, Communications in Mathematical Physics, Continuum Mechanics and Thermodynamics, Economic Theory, Inventiones mathematicae, Journal of Evolutionary Economics, Journal of Mathematical Biology, Manuscripta mathematica, Mathematische Annalen, Mathematische Semesterberichte, Mathematische Zeitschrift, Numerische Mathematik, Probability Theory and Related Fields, Statistical papers, Theoretica Chimica Acta

Plour1g

global plain T_FX packages for all journals mentioned above; **PJour 1** may also still be used. All packages are available via mailserver, FTP server or on DOS diskettes.

Mailserver

Send an e-mail message to svserv@vax.ntp.springer.de which must contain one (several) of the following commands:

Llour1

get /tex/latex/ljourl.zip **Plour19** get /tex/plain/piour1g.zip

> In order to be transmitted ungarbled via the net, the files are pkzipped and uunencoded. The line get /tex/help-tex.txt in your e-mail to sysery will send you a file explaining how to unpack the files you receive. Please do not send regular e-mail to this address.

FTP server

The internet address is 192.129.24.12 (trick.ntp.springer.de) The username is FTP or ANONYMOUS and the files are in the directory /pub/tex

Diskettes

To get the macro files and the AMS fonts (when needed) on 3.5" DOS diskettes please write to:

Springer-Verlag, Journal Production,

Tiergartenstr. 17

D-69121 Heidelberg, Germany

e-mail: springer@vax.ntp.springer.de FAX number: x 49 6221 487625

Please indicate clearly which macro package you need and the journal for which your paper is intended.

Use our IATEX and plain-TEX macros to prepare your article for this and for other Springer journals.