

Communications in

Mathematical Physics

Volume 94 Number 1 1984

- Y. M. Park Bounds on Exponentials of Local Number Operators
in Quantum Statistical Mechanics 1
- K. Takasaki A New Approach to the Self-dual Yang-Mills Equations 35
- J. T. Beale, T. Kato, A. Majda Remarks on the Breakdown of Smooth Solutions for the
3-D Euler Equations 61
- A. G. Izergin, V. E. Korepin The Quantum Inverse Scattering Method Approach to
Correlation Functions 67
- V. E. Korepin Correlation Functions of the One-Dimensional Bose Gas
in the Repulsive Case 93
- B. Derrida, C. Itzykson, J. M. Luck Oscillatory Critical Amplitudes in Hierarchical Models 115
- G. A. Battle III A New Combinatoric Estimate for Cluster Expansions 133

Indexed in Current Contents
Evaluated for Physics Briefs and INKA-PHYS data base



Springer-Verlag
Berlin Heidelberg New York Tokyo

Communications in Mathematical Physics

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 the authors and by the responsible authorities — tacitly or explicitly — in the institutes where the work was carried out and that, if accepted, it will not be published elsewhere in the same form, in either the same or another language, without the consent of the copyright holders. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform, electronic data-base, video-disks, or any other reproductions of similar nature, and translations. Photographic reproduction, microform, electronic data-base, video-disks, or any other reproduction of text, figures or tables from this journal is prohibited without permission obtained from the publishers.

While the advice and information in this journal is believed to be true and accurate at the date of going to press, neither the authors nor the editors nor the publisher can accept 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 the USA. Photocopies may be made for personal or internal use beyond that permitted by Section 107 or 108 of the U.S. Copyright Law, provided a fee is paid. This fee is \$ 0.20 per page or a minimum of \$ 1.00 if an article consists of less than five pages. Please pay this fee to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0010-3616 volume, and first and last page numbers of each article copied.

The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

Authors should mark manuscripts according to the "Instructions to Authors." They should be aware that manuscripts which are not properly marked require additional time for publication. Manuscripts should be sent to:

Prof. H. Araki, Research Institute for Mathematical Sciences, Kyoto University, Kyoto, 606, Japan

Prof. J. Fröhlich, ETH-Hönggerberg, CH-8093 Zürich, Switzerland

Prof. R. Haag, II. Institut für Theoretische Physik, Luruper Chaussee 149, D-2000 Hamburg 50, Federal Republic of Germany

Prof. S. Hawking, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, Silver Street, Cambridge CB3 9EW, England

Prof. A. Jaffe, Lyman Laboratory of Physics, Harvard University, Cambridge, MA 02138, USA

Prof. O. Lanford, I. H. E. S., F-91440 Bures-sur-Yvette, France

Prof. J. Lascoux, Physique Théorique, Ecole Polytechnique, F-91120 Palaiseau, France

Prof. J. L. Lebowitz, Department of Mathematics, Rutgers University, New Brunswick, NJ 08903, USA

Prof. G. Mack, II. Institut für Theoretische Physik, Luruper Chaussee 149, D-2000 Hamburg 50, Federal Republic of Germany

Prof. J. Mather, Department of Mathematics, Fine Hall, Princeton University, Princeton, NJ 08544, USA

Prof. L. Nirenberg, Courant Institute, New York University, 251 Mercer Street, New York, NY, 10012, USA

Prof. K. Osterwalder, E.T.H. Zentrum, CH-8092 Zürich, Switzerland

Prof. B. Simon, Department of Mathematics, California Institute of Technology, Pasadena, CA 91125, USA

Prof. Ya. G. Sinai, L. D. Landau Institute for Theoretical Physics, ul. Kosygina, dom 2, SU-117334 Moscow, V—334, USSR

Prof. T. Spencer, Courant Institute, New York University, 251 Mercer Street, New York, NY 10012, USA

Prof. R. Stora, CERN, Theory Division, CH-1211 Geneva 23, Switzerland

Prof. S.-T. Yau, School of Mathematics, The Institute for Advanced Study, Princeton, NJ 08540, USA

Mathematical methods with direct relevance to physics

Equilibrium statistical mechanics

Conceptual structure

Gravitation and field theories

Chief Editor

Dynamical systems

Nonequilibrium statistical mechanics

Quantum field theory and statistical mechanics

Classical dynamical systems

Partial differential equations

Constructive quantum field theory and general theory of quantized fields

Schrödinger operators and atomic physics

Statistical physics and dynamical systems

Disordered systems

Lagrangian quantum field theory

Relativity; geometry and physics

100 offprints of each article will be supplied to the author free of charge and additional copies may be obtained at cost price if ordered before the issue goes to press.

Subscription Information. Vols. 92-96, (4 issues each) will appear in 1984. The price of each volume is DM 394.00 or approx. US \$ 151.60. Prices for back volumes are available on request. Correspondence concerning subscriptions should be addressed to the publisher. **North America.** Annual subscription rate: US \$ 802.00, including carriage charges. Subscriptions are entered with prepayment only. Orders should be addressed to: Springer-Verlag New York Inc., Service Center Secaucus, 44 Hartz Way, Secaucus, NJ 07094, USA, Telephone (201) 348-4033, Telex 0023 125994. Members of the International Association of Mathematical Physics (IAMP) are entitled to receive the journal strictly for their own personal use at a special reduced rate. The orders must be placed through the IAMP. **All Other Countries.** Annual subscription rate: DM 1970.00, plus carriage charges. Airmail delivery on request only. For Japan, carriage charges (Surface Airmail Lifted) are DM 191.40; for India DM 108.50. Single issue price DM 118.20 plus carriage charges. — Orders for all countries except North America can either be placed with your bookdealer or sent directly to: Springer-Verlag, Heidelberg Platz 3, D-1000 Berlin 33. Tel. 0 30/82 07-1, Telex 01 83 319. **Changes of Address:** Allow six weeks for all changes to become effective. All communications should include both old and new addresses (with Postal Codes) and should be accompanied by a mailing label from a recent issue. **Microform:** Microform editions are available from: University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106, USA.

Production

Journal Production Department I, Springer-Verlag,
Postfach 10 52 80, D-6900 Heidelberg 1, Federal Republic of Germany,
Tel. 0 62 21/4 87-3 26, Telex 04 61 723