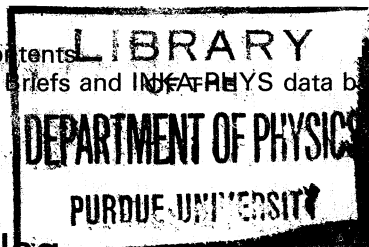


Communications in Mathematical Physics

Volume 99 Number 4 1985

- G. W. Milton The Coherent Potential Approximation is a Realizable Effective Medium Scheme 463
- A. J. Chorin Solution of Lattice Models by Successive Linkage 501
- P. A. Horváthy, J. H. Rawnsley Monopole Charges for Arbitrary Compact Gauge Groups and Higgs Fields in any Representation 517
- J. C. H. Simon, E. Taflin Wave Operators and Analytic Solutions for Systems of Non-Linear Klein—Gordon Equations and of Non-Linear Schrödinger Equations 541
- B. Carter Bunting Identity and Mazur Identity for Non-Linear Elliptic Systems Including the Black Hole Equilibrium Problem 563
- M. R. Herman Are There Critical Points on the Boundaries of Singular Domains? 593
- T. Dray, G. 't Hooft The Effect of Spherical Shells of Matter on the Schwarzschild Black Hole 613
- H. P. McKean, E. Trubowitz The Spectral Class of the Quantum-Mechanical Oscillator (*Erratum*) 626

Indexed in Current Contents
Evaluated for Physics Briefs and INFLIBPHYS 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 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publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders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 page, or a minimum of US \$ 1.00 if an article contains fewer than five pages. 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

Other regulations: Authors publishing in this journal can, under certain conditions, benefit from library and photocopy fees collected by VG WORT. Authors of German nationality and those resident in the Federal Republic of Germany or Berlin (West), as well as citizens of Austria, Switzerland and member countries of the European Community, may apply to Verwertungsgesellschaft WORT, Abteilung Wissenschaft, Goethestraße 49, D-8000 München 2, for detailed information

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. M. E. Fisher, Baker Laboratory, Department of Chemistry, Cornell University, Ithaca, NY 14850, USA

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. 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. G. Parisi, Dipartimento di Fisica, Università di Roma II, Tor Vergata, I-00173 Roma, Italy

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. S.-T. Yau, Department of Mathematics, University of California at San Diego, La Jolla, CA 92093, USA

Mathematical methods with direct relevance to physics

Statistical 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

General theoretical physics

Schrödinger operators and atomic physics

Statistical physics and dynamical systems

Disordered systems

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 97-101, (4 issues each) will appear in 1985. **North America.** Annual subscription rate: US \$ 797.00, single issue price \$ 48.00 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 125 994. 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 2130.00, plus carriage charges. Volume price: DM 426.00, single issue price: DM 127.80, plus carriage charges. Airmail delivery on request only. Carriage charges for SAL (Surface Airmail Lifted) to Japan, India, Australia and New Zealand are available on request. — Orders for all countries except North America can either be placed with your bookseller or sent directly to: Springer-Verlag, Heidelberger 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. **Back Volumes.** Prices are available on request. **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 25, Telex 04 61 723