

Communications in
**Mathematical
Physics**

Volume 64 1978/79

Chief Editor A. Jaffe, Cambridge, MA

Editorial Board
H. Araki, Kyoto
E. Brézin, Saclay
R. Geroch, Chicago, IL
J. Ginibre, Orsay
J. Glimm, New York, NY
R. Haag, Hamburg
J. L. Lebowitz, New Brunswick, NJ
E. Lieb, Princeton, NJ
J. Moser, New York, NY
K. Osterwalder, Zürich
D. Ruelle, Bures-sur-Yvette
B. Simon, Princeton, NJ
R. Stora, Geneva

Advisory Board
M. F. Atiyah, Oxford
G. 't Hooft, Utrecht
C. N. Yang, Stony Brook, NY



Springer-Verlag
Berlin Heidelberg New York

Copyright

It is a fundamental condition that submitted manuscripts have not been published and will not be simultaneously submitted or published elsewhere. 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 or any other reproductions of similar nature, and translations.

Photographic reproduction, microform, or any other reproduction of text, figures, or tables from this journal is prohibited without permission obtained from the publisher.

Special Regulations for the USA

The Article Fee Code on the first page of an article in this journal indicates the copyright owner's consent that in the USA copies may be made for personal or internal use, provided the stated fee for copying beyond that permitted by Section 107 or 108 of the United States Copyright Law is paid through the Copyright Clearance Center, Inc.

If a code does not appear, copies of the article may be made without charge, provided permission is obtained from the publisher.

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.

Alle Rechte, einschließlich das der Übersetzung in fremde Sprachen und das der fotomechanischen Wiedergabe oder einer sonstigen Vervielfältigung, auch in Mikroform, vorbehalten. Jedoch wird gewerblichen Unternehmen für den innerbetrieblichen Gebrauch nach Maßgabe des zwischen dem Börsenverein des Deutschen Buchhandels e. V. und dem Bundesverband der Deutschen Industrie abgeschlossenen Rahmenabkommens die Anfertigung einer fotomechanischen Vervielfältigung gestattet. Wenn für diese Zeitschrift kein Pauschalabkommen mit dem Verlag vereinbart worden ist, ist eine Wertmarke im Betrage von DM 0,40 pro Seite zu verwenden. *Der Verlag läßt diese Beträge den Autorenverbänden zufließen.*

Springer-Verlag Berlin Heidelberg New York

Printers: Brühlsche Universitätsdruckerei, Lahn-Gießen

Printed in Germany — © by Springer-Verlag Berlin Heidelberg 1978 / 79

Contents

Albeverio, S., Høegh-Krohn, R.: Frobenius Theory for Positive Maps of von Neuman Algebras.	83
Boldrighini, C., Franceschini, V.: A Five-Dimensional Truncation of the Plane Incompressible Navier-Stokes Equations	159
Bratteli, O., Kishimoto, A., Robinson, D. W.: Ground States of Quantum Spin Systems	41
Bricmont, J., Fontaine, J. R., Landau, L.: Absence of Symmetry Breakdown and Uniqueness of the Vacuum for Multicomponent Field Theories	49
Cantoni, V.: Erratum	189
Davies, E. B.: Symmetry Breaking for a Non-linear Schrödinger Equation	191
Deift, P., Hunziker, W., Simon, B., Vock, E.: Pointwise Bounds of Eigenfunctions and Wave Packets in N -Body Quantum Systems IV	1
Eckman, J.-P., Epstein, H.: Time-Ordered Products and Schwinger Functions	95
Epstein, H., see Eckman, J.-P.	95
Fontaine, J. R., see Bricmont, J., et al.	49
Forger, M., Hess, H.: Universal Metaplectic Structures and Geometric Quantization	269
Franceschini, V., see Boldrighini, C.	159
Herbst, I. W.: Dilation Analyticity in Constant Electric Field. The Two Body Problem	279
Hess, H., see Forger, M.	269
Hoegh-Krohn, R., see Albeverio, S.	83
Hunziker, W., see Deift, P., et al.	1
Israel, R. B., Nappi, C. R.: Quark Confinement in the Two-Dimensional Lattice Higgs-Villain Model	177
Jantzen, R. T.: The Dynamical Degrees of Freedom in Spatially Homogeneous Cosmology	211
Kibble, T. W. B.: Relativistic Models of Nonlinear Quantum Mechanics	73
Kishimoto, A., see Bratteli, O., et al.	41
Klaus, M., Wüst, R.: Characterization and Uniqueness of Distinguished Self-Adjoint Extensions of Dirac Operators	171
Landau, L., see Bricmont, J., et al.	49
Malyshev, V. A.: Uniform Cluster Estimates for Lattice Models	131
Nappi, C. R., see Israel, R. B.:	177
Newhouse, S., Ruelle, D., Takens, F.: Occurrence of Strange Axiom A Attractors Near Quasi Periodic Flows on T^m , $m \geq 3$.	35
Robinson, D. W., see Bratteli, O., et al.	41
Ruelle, D., see Newhouse, S., et al.	35
Schwarz, A. S.: Instantons and Fermions in the Field of Instanton	233
Simon, B., see Deift, P., et al.	1
Takens, F., see Newhouse, S., et al.	35
Vock, E., see Deift, P., et al.	1
Wüst, R., see Klaus, M.	171

Indexed in Current Contents

Communications in Mathematical Physics

Volume 64 Number 1 1978

- | | |
|--|---|
| P. Deift, W. Hunziker, B. Simon,
E. Vock | Pointwise Bounds on Eigenfunctions and Wave
Packets in N -Body Quantum Systems IV 1 |
| S. Newhouse, D. Ruelle,
F. Takens | Occurrence of Strange Axiom A Attractors Near
Quasi Periodic Flows on T^m , $m \geq 3$ 35 |
| O. Bratteli, A. Kishimoto,
D. W. Robinson | Ground States of Quantum Spin Systems 41 |
| J. Bricmont, J. R. Fontaine,
L. Landau | Absence of Symmetry Breakdown and
Uniqueness of the Vacuum for Multicomponent
Field Theories 49 |
| T. W. B. Kibble | Relativistic Models of Nonlinear Quantum
Mechanics 73 |
| S. Albeverio, R. Høegh-Krohn | Frobenius Theory for Positive Maps of
von Neuman Algebras 83 |

Indexed in Current Contents



Springer-Verlag
Berlin Heidelberg New York

Communications in Mathematical Physics

Copyright

It is a fundamental condition that submitted manuscripts have not been published and will not be simultaneously submitted or published elsewhere. 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 or any other reproductions of similar nature, and translations.

Photographic reproduction, microform, or any other reproduction of text, figures, or tables from this journal is prohibited without permission obtained from the publisher.

Special Regulations for the USA

The Article Fee Code on the first page of an article in this journal indicates the copyright owner's consent that in the USA copies may be made for personal or internal use, provided the stated fee for copying beyond that permitted by Section 107 or 108 of the United States Copyright Law is paid through the Copyright Clearance Center, Inc.

If a code does not appear, copies of the article may be made without charge, provided permission is obtained from the publisher.

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.

Manuscripts may be sent to:

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

Prof. E. Brézin, Service de Physique Théorique, CEN Saclay, B. P. 2, F - 91190 Gif-sur-Yvette, France

Prof. R. Gerlach, E. Fermi Institute, University of Chicago, 933 East 56 Street, Chicago, IL 60637, USA

Prof. J. Ginibre, Laboratoire de Physique Théorique et Hautes Énergies, Université de Paris IX, Batiment 211, F-91405 Orsay, France

Prof. J. Glimm, The Rockefeller University, 1230 York Avenue, New York, NY 10021, USA

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

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

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

Prof. E. Lieb, Physics Department, Princeton University, P. O. Box 708, Princeton, NJ 08540, USA

Prof. J. Moser, New York University, Courant Institute of Mathematical Sciences, 251 Mercer Street, New York, NY 10012, USA

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

Prof. D. Ruelle, IHES, F - 91440 Bures-sur-Yvette, France

Prof. B. Simon, Jadwin Physics Laboratory Princeton University, Princeton, NJ 08540, USA

Prof. R. Stora, from September 1, 1978 to August 31, 1979: CERN, Theory Division, CH-1211 Geneva 23, Switzerland

Mathematical methods (Functional analysis, operator algebra and group theory, with direct relevance to physics)

Quantum fields and statistical mechanics

General relativity, cosmology

Quantum mechanics

Fluid mechanics

Conceptual structure

Chief Editor

Nonequilibrium statistical mechanics (Time development of infinite systems, ergodic theory, transport theory, random processes, dissipative phenomena)

Equilibrium statistical mechanics

Dynamical systems (Differential equations and their application to physical systems), classical mechanics

Constructive quantum field theory and general theory of quantized fields

Dissipative dynamical systems

Scattering theory and atomic physics

Lagrangian quantum field theory

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

Volumes 64-70 (3 issues each) will appear in 1979. The price of each volume is DM 158,— or \$ 79.00. Information about obtaining back volumes and microform editions available upon request.

North America. Subscription rate: \$ 576,50, including postage and handling. 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.

All Other Countries. Subscription rate: DM 1106.—, plus postage and handling. Orders can either be placed with your bookdealer or sent directly to: Springer-Verlag, Heidelberg Platz 3, D-1000 Berlin 33.

Springer-Verlag
Journal Production Dept. I
Postfach 105280
D-6900 Heidelberg 1
Telephone (06221) 487332
Telex 04-61690

Springer-Verlag
Heidelberg Platz 3
D-1000 Berlin 33
Telephone (030) 822001
Telex 01-83319

Springer-Verlag New York Inc.
175 Fifth Avenue
New York, NY 10010, USA
Telephone (212) 477-8200
Telex 0023 232 235