

Communications in
**Mathematical
Physics**

Volume 53 1977

Chief Editor J. Glimm, New York, NY

Editorial Board H. Araki, Kyoto
R. Geroch, Chicago, IL
R. Haag, Hamburg
W. Hunziker, Zürich
A. Jaffe, Cambridge, MA
J. L. Lebowitz, New York, NY
E. Lieb, Princeton, NJ
J. Moser, New York, NY
R. Stora, Marseille

Advisory Board K. Hepp, Zürich
R. Jost, Zürich
M. C. Polivanov, Moscow
D. Ruelle, Bures-sur-Yvette
A. S. Wightman, Princeton, NJ



Springer-Verlag
Berlin Heidelberg New York

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is transferred to the publisher.

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, Gießen

Printed in Germany – © by Springer-Verlag Berlin Heidelberg 1977

Contents

Aizenman, M., Goldstein, S., Gruber, C., Lebowitz, J.L., Martin, P.: On the Equivalence between KMS-States and Equilibrium States for Classical Systems	209
Araki, H., Kastler, D., Takesaki, M., Haag, R.: Extension of KMS States and Chemical Potential	97
Brydges, D., Federbush, P.: The Cluster Expansion for Potentials with Exponential Fall-off	19
Chadan, K., Martin, A.: Inequalities on the Number of Bound States in Oscillating Potentials	221
Driessler, W.: On the Type of Local Algebras in Quantum Field Theory	295
Federbush, P., s. Brydges, D.	19
Glassey, R.T.: Asymptotic Behavior of Solutions to Certain Nonlinear Schrödinger-Hartree Equations	9
Goldstein, S., s. Aizenman, M., et al.	209
Gruber, C., s. Aizenman, M., et al.	209
Haag, R., s. Araki, H., et al.	97
Hegerfeldt, G.C., Nappi, C.R.: Mixing Properties in Lattice Systems	1
Herbst, I.W.: Spectral Theory of the Operator $(p^2 + m^2)^{1/2} - Ze^2/r$	285
Isaacson, D.: The Critical Behavior of ϕ_1^4	257
Jørgensen, P.E.T.: Trace States and KMS States for Approximately Inner Dynamical One-Parameter Groups of *-Automorphisms	135
Kac, V.G.: A Sketch of Lie Superalgebra Theory	31
Kastler, D., s. Araki, H., et al.	97
Lebowitz, J.L., s. Aizenman, M., et al.	209
Lieb, E.H., Simon, B.: The Hartree-Fock Theory for Coulomb Systems	185
Mack, G.: Convergence of Operator Product Expansions on the Vacuum in Conformal Invariant Quantum Field Theory	155
Martin, A., s. Chadan, K.	221
Martin, P., s. Aizenman, M., et al.	209
Maugin, G.A.: Infinitesimal Discontinuities in Initially Stressed Relativistic Elastic Solids	233
McBryan, O.A., Spencer, T.: On the Decay of Correlations in $SO(n)$ -symmetric Ferromagnets	299
Nappi, C.R., s. Hegerfeldt, G.C.	1
Parenti, C., Strocchi, F., Velo, G.: Hilbert Space Sectors for Solutions of Non-linear Relativistic Field Equations	65
Roepstorff, G.: A Stronger Version of Bogoliubov's Inequality and the Heisenberg Model	143
Ruelle, D.: A Heuristic Theory of Phase Transitions	195
Semenov, Yu. A.: Schrödinger Operators with L_{loc}^p -Potentials	277
Simon, B.: Scattering Theory and Quadratic Forms: On a Theorem of Schechter	151
Simon, B., s. Lieb, E.H.	185
Spencer, T., s. McBryan, O.A.	299
Strocchi, F., s. Parenti, C., et al.	65
Takesaki, M., s. Araki, H., et al.	97
Velo, G., s. Parenti, C., et al.	65

Communications in
**Mathematical
Physics**

Volume 53 Number 1 1977

- G. C. Hegerfeldt, C. R. Nappi Mixing Properties in Lattice Systems 1
- R. T. Glassey Asymptotic Behavior of Solutions to Certain Nonlinear Schrödinger-Hartree Equations 9
- D. Brydges, P. Federbush The Cluster Expansion for Potentials with Exponential Fall-off 19
- V. G. Kac A Sketch of Lie Superalgebra Theory 31
- C. Parenti, F. Strocchi, G. Velo Hilbert Space Sectors for Solutions of Non-linear Relativistic Field Equations 65

Indexed in Current Contents



Springer-Verlag
Berlin Heidelberg New York

Commun. math. Phys.

ISSN 0010-3616 CMPHAY 53 (1) 1-96 (1977)

25. II. 1977

Communications in Mathematical Physics

It is a fundamental condition that submitted manuscripts have not been, and will not simultaneously be submitted or published elsewhere. With the acceptance of a manuscript publication, the publishers acquire full and exclusive copyright for all languages countries. Unless special permission has been granted by the publishers, no photographic reproduction or any other reproductions of a similar nature may be made of the journal, of individual contributions contained therein or of extracts therefrom.

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.

Manuscripts may be sent to:

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

Prof. R. Geroch, 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, Belfer Graduate School of Science, Yeshiva University, New York, NY 10033, 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. R. Stora, Centre National de la Recherche Scientifique, Centre de Physique Théorique, 31, chemin J. Aiguier, F-13274 Marseille, Cedex 2, France

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

General relativity

Quantum mechanics

Chief Editor

General structure of quantum field theory foundations of quantum mechanics

Constructive quantum field theory

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

Equilibrium statistical mechanics

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

Lagrangian quantum field theory

In order to avoid delay in publication this journal appears in loose numbers which can be subsequently assembled in volumes.

Subscription Information

Volumes 52—57 (3 issues each) will appear in 1977. The publisher reserves the right to additional volumes during the calendar year. Information about obtaining back volumes and micro-editions available upon request.

All Countries (Except North America). Subscription rate: DM 888,—, 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.

North America. Subscription rate: \$ 374.30, including postage and handling. Subscription entered with prepayment only. Orders should be addressed to: Springer-Verlag New York Inc., 175 Avenue, New York, NY 10010.

Springer-Verlag

Journal Production Dept. I
Postfach 105280
D-6900 Heidelberg 1
Telephone (06221) 487-1
Telex 04-61690

Springer-Verlag

Heidelberger Platz 3
D-1000 Berlin 33
Telephone (030) 822001
Telex 01-83319

Springer-Verlag

New York Inc.
175 Fifth Avenue
New York, NY 10010
Telephone (212) 673-2
Telex 23-2235