

Communications in  
**Mathematical  
Physics**

Volume 76 1980

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, Zürich  
K. Osterwalder, Zürich  
D. Ruelle, Bures-sur-Yvette  
B. Simon, Princeton, NJ  
Ya. G. Sinai, Moscow  
R. Stora, Geneva

Advisory Board  
M. F. Atiyah, Oxford  
G. 't Hooft, Utrecht  
C. N. Yang, Stony Brook, NY  
S. T. Yau, Princeton, NJ



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., 21 Congress Street, Salem, MA 01970, USA

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.

Die in der Zeitschrift veröffentlichten Beiträge sind urheberrechtlich geschützt. Alle Rechte, insbesondere das der Übersetzung in fremde Sprachen, vorbehalten. Kein Teil dieser Zeitschrift darf ohne schriftliche Genehmigung des Verlages in irgendeiner Form — durch Fotokopie, Mikrofilm oder andere Verfahren — reproduziert oder in eine von Maschinen, insbesondere von Datenverarbeitungsanlagen verwendbare Sprache übertragen werden. Auch die Rechte der Wiedergabe durch Vortrag, Funk- und Fernsehsendung, im Magnettonverfahren oder ähnlichem Wege bleiben vorbehalten.

Fotokopien für den persönlichen und sonstigen eigenen Gebrauch dürfen nur von einzelnen Beiträgen oder Teilen daraus als Einzelkopien hergestellt werden. Jede im Bereich eines gewerblichen Unternehmens hergestellte und benutzte Kopie dient gewerblichen Zwecken gemäß § 54 (2) UrhG und verpflichtet zur Gebührenzahlung an die VG WORT, Abteilung Wissenschaft, Goethestraße 49, D-8000 München 2, von der die einzelnen Zahlungsmodalitäten zu erfragen sind.

Springer-Verlag KG Berlin Heidelberg New York

Printers: Brühlsche Universitätsdruckerei, Giessen

Printed in Germany — © by Springer-Verlag Berlin Heidelberg 1980

# Contents

Ando, T., see Hemmen, J. L. van	143
Bashilov, Yu. A., Pokrovsky, S. V.: Conservation Laws in the Quantum Version of $N$ -Positional Potts Model	129
Caginalp, G.: Wall and Boundary Free Energies. III. Correlation Decay and Vector Spin Systems	149
Collet, P., Eckmann, J.-P., Lanford III, O. E.: Universal Properties of Maps on an Interval	211
Eckmann, J.-P., see Collet, P., et al.	211
Enss, V., Simon, B.: Finite Total Cross-Sections in Nonrelativistic Quantum Mechanics	177
Flaschka, H., Newell, A. C.: Monodromy- and Spectrum-Preserving Deformations. I	67
Hemmen, J. L. van, Ando, T.: An Inequality for Trace Ideals	143
Korepin, V. E.: The Mass Spectrum and the $S$ Matrix of the Massive Thirring Model in the Repulsive Case	165
Lanford III, O. E., see Collet, P., et al.	211
Nenciu, G.: On the Adiabatic Limit for Dirac Particles in External Fields	117
Newell, A. C., see Flaschka, H.	67
Pokrovsky, S. V., see Bashilov, Yu. A.	129
Provost, J. P., Vallee, G.: Riemannian Structure on Manifolds of Quantum States	289
Renardy, M.: On Bounded Solutions of a Classical Yang-Mills Equation	277
Simon, B., see Enss, V.	177
Vallee, G., see Provost, J. P.	289
Vuillermot, P. A.: Nonlinear Dynamics of the Infinite Classical Heisenberg Model: Existence: Proof and Classical Limit of the Corresponding Quantum Time Evolution	1
Waniewski, J.: „Time Inversion” and Mobility of Many Particle Systems	29
Yates, R. G.: Fibre Bundles and Supersymmetries	255
Zagrebnov, V. A.: On the Families of Gibbs Semigroups	269
Zimmermann, W.: The Renormalization Group of the Model of $A^4$ -Coupling in the Abstract Approach of Quantum Field Theory	41

Indexed in Current Contents



Communications in  
**Mathematical  
Physics**

Volume 76 Number 1 1980

P. A. Vuillermot Nonlinear Dynamics of the Infinite Classical  
Heisenberg Model: Existence Proof and Classical  
Limit of the Corresponding Quantum Time  
Evolution 1

J. Waniewski „Time Inversion“ and Mobility of Many Particle  
Systems 29

W. Zimmermann The Renormalization Group of the Model of  $A^4$ -  
Coupling in the Abstract Approach of Quantum  
Field Theory 41

H. Flaschka, A. C. Newell Monodromy- and Spectrum-Preserving  
Deformations I 67

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., 21 Congress Street, Salem, MA 01970, USA. 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.

**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:**

<i>Prof. H. Araki</i> , Research Institute for Mathematical Sciences, Kyoto University, Kyoto, 606, Japan	<i>Mathematical methods with direct relevance to physics</i>
<i>Prof. E. Brézin</i> , Service de Physique Théorique, CEN Saclay, B. P. 2, F-91190 Gif-sur-Yvette, France	<i>Quantum fields and statistical mechanics</i>
<i>Prof. R. Geroch</i> , E. Fermi Institute, University of Chicago, 933 East 56 Street, Chicago, IL 60637, USA	<i>General relativity, cosmology</i>
<i>Prof. J. Ginibre</i> , Laboratoire de Physique Théorique et Hautes Énergies, Université de Paris IX, Batiment 211, F-91405 Orsay, France	<i>Quantum mechanics</i>
<i>Prof. J. Glimm</i> , The Rockefeller University, 1230 York Avenue, New York, NY 10021, USA	<i>Fluid mechanics</i>
<i>Prof. R. Haag</i> , II. Institut für Theoretische Physik, Luruper Chaussee 149, D-2000 Hamburg 50, Federal Republic of Germany	<i>Conceptual structure</i>
<i>Prof. A. Jaffe</i> , Lyman Laboratory of Physics, Harvard University, Cambridge, MA 02138, USA	<i>Chief Editor</i>
<i>Prof. J. L. Lebowitz</i> , Department of Mathematics, Rutgers University, New Brunswick, NJ 08903, USA	<i>Nonequilibrium statistical mechanics</i>
<i>Prof. E. Lieb</i> , Physics Department, Princeton University, P.O. Box 708, Princeton, NJ 08540, USA	<i>Equilibrium statistical mechanics</i>
<i>Prof. J. Moser</i> , E.T.H. Zentrum, CH-8092 Zürich, Switzerland	<i>Classical dynamical systems</i>
<i>Prof. K. Osterwalder</i> , E. T. H. Zentrum, CH-8092 Zürich, Switzerland	<i>Constructive quantum field theory and general theory of quantized fields</i>
<i>Prof. D. Ruelle</i> , IHES, F-91440 Bures-sur-Yvette, France	<i>Dissipative dynamical systems</i>
<i>Prof. B. Simon</i> , Department of Mathematics, California Institute of Technology, Pasadena, CA 91125, USA	<i>Scattering theory and atomic physics</i>
<i>Prof. Ya. G. Sinai</i> , L. D. Landau Institute for Theoretical Physics, Academy of Sciences, Vorobyevskoe Shosse, 2, 117334 Moscow, USSR	<i>Statistical physics and dynamical systems</i>
<i>Prof. R. Stora</i> , (to Aug. 31, 81): CERN, Theory Division, CH-1211 Geneva 23, Switzerland	<i>Lagrangian quantum field theory</i>

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. 71-77 (3 issues each) will appear in 1980. The price of each volume is DM 164.00 or US 91.00. Information about obtaining back volumes and microform editions available upon request.

*Change of address.* Six weeks should be allowed for all changes to become effective. All communications should include both old and new addresses (with postal codes) and should be accompanied by an address label from a recent issue.

*North America.* Subscription rate: US 660.50, 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, Telex 0023125994.

*Japan.* Subscription rate: DM 1225.00 including postage (Surface Airmail Lifted) and handling.

*All Other Countries.* Subscription rate: DM 1148.00, plus postage and handling.

Orders for all countries except North America can either be placed with your bookdealer or sent directly to: Springer-Verlag, Heidelberger Platz 3, D-1000 Berlin 33.

## Springer-Verlag KG

Postfach 105280  
D-6900 Heidelberg 1  
Telephone (06221) 487328  
Telex 04-61690

## Springer-Verlag KG

Heidelberger Platz 3  
D-1000 Berlin 33  
Telephone (030) 8207-1  
Telex 01-83319

## Springer-Verlag New York Inc.

175 Fifth Avenue  
New York, NY 10010, USA  
Telephone (212) 477-8200  
Telex 0023232235