# Mathematical Physics

# Volume 58 Number 3 1978

E. F. Corrigan, D. B. Fairlie, R. G. Yates, P. Goddard

> G. Burdet, M. Perrin, M. Perroud

> > S. T. C. Siklos

W. Pusz, S. L. Woronowicz

C. J. S. Clarke

R. Schrader

D. C. Brydges

The Construction of Self-dual Solutions to SU(2) Gauge Theory 223

Generating Functions for the Affine Symplectic Group 241

Occurrence of Whimper Singularities 255

Passive States and KMS States for General Quantum Systems 273

The Singular Holonomy Group 291

Towards a Constructive Approach of a Gauge

Invariant, Massive  $P(\phi)_2$  Theory 299

A Rigorous Approach to Debye Screening in Dilute Classical Coulomb Systems 313

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.

Manuscript 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-91 405 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. 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, Fluid mechanics

General structure of quantum field theory and 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 their application to physical systems), classical mechanics

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 58—63 (3 issues each) will appear in 1978. Information about obtaining back volumes and microform editions available upon request.

**North America.** Subscription rate: \$ 429.10, 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 948,—, plus postage and handling. Orders can either be placed with your bookdealer or sent directly to: Springer-Verlag, Heidelberger Platz 3, D-1000 Berlin 33.

Springer-Verlag

Journal Production Dept. I Postfach 105 280 D-6900 Heidelberg 1 Telephone (06 221) 487 332 Telex 04-61690 Springer-Verlag

Heidelberger Platz 3 D-1000 Berlin 33 Telephone (030) 822 001 Telex 01-83 319 Springer-Verlag New York Inc.

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