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# From Quantum Mechanics to Technology

Proceedings of the XXXIInd Winter School  
of Theoretical Physics, Held in Karpacz, Poland  
19–29 February 1996



Springer

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Cataloging-in-Publication Data applied for.

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

**From quantum mechanics to technology** : proceedings of the  
XXXII<sup>nd</sup> Winter School of Theoretical Physics, held in  
Karpacz Poland, 19 - 29 February 1996 / Zygmunt Petru ... (ed.).  
- Berlin ; Heidelberg ; New York ; Barcelona ; Budapest ;  
Hong Kong ; London ; Milan ; Paris ; Santa Clara ; Singapore ;  
Tokyo : Springer, 1996

(Lecture notes in physics ; Vol. 477)

ISBN 3-540-61792-2

NE: Petru, Zygmunt [Hrsg.]; Zimowa Szkoła Fizyki Teoretycznej <32,  
1996, Karpacz>; GT

ISSN 0075-8450

ISBN 3-540-61792-2 Springer-Verlag Berlin Heidelberg New York

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Printed in Germany

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Typesetting: Camera-ready by the authors

Cover design: *design & production* GmbH, Heidelberg

SPIN: 10550463

55/3144-543210 - Printed on acid-free paper

## PREFACE

It is with great satisfaction that we present the Proceedings of the 32nd Karpacz Winter School of Theoretical Physics. It was our intention that the programme of the school should cover topics in condensed matter physics ranging from quantum mechanics to technology – a broad field, indeed. In practice semiconductors, superconductors and spin systems were emphasized, reflecting the scientific interests of the Wrocław physical community; other topics connected with the subject of the school were also treated, but to a lesser degree. We were aware of the risks contained in such a general formula; the usual Karpacz meeting is something between a school and a conference and it was possible that some of the lectures might be too general for specialists or too involved for other participants. However, it seemed to us that there was a need for a school that would provide a forum of discussion for several aspects of condensed matter physics. The success of the 32nd Karpacz School confirmed that the right formula was chosen for the meeting.

These proceedings contain contributions that are outstanding both in their importance and for their timeliness. Therefore, we must express, first of all, our gratitude to the authors of these reports for their collaboration. We also thank the invited speakers who regretfully did not send their manuscripts in time and J. Villain who was not able to attend the school but nonetheless submitted his lecture notes, which are included in the proceedings.

The 32nd Karpacz School was organized jointly by three Wrocław Institutes: the Institute of Theoretical Physics of University of Wrocław (**Jerzy Przystawa**), the Institute of Physics of the Wrocław Technical University (**Lucjan Jacak**) and the Institute of Low Temperature and Structure Research of the Polish Academy of Sciences (**Józef Sznajd**).

The school was attended by 120 participants from 15 countries and the programme comprised 30 invited lectures and poster contributions.

It is a pleasure to thank all of the participants who in spite of the sometimes heated discussions and disputes about physics helped to create the warm and informal atmosphere characteristic of the Karpacz Schools.

We are most obliged to Dr. Czesław Oleksy who took upon himself the burden of financial matters and to members of the Organizing Committee: Wojciech Gańca, Bogdan Grabiec, Marek Mozrzyms and Mirosław Pruchnik for their assistance.

Further, we should like to express our deep gratitude to Mrs. Anna Jadczyk for her skillful work in preparing the camera-ready manuscript of the book.

It would have been impossible to organize the school without financial support from our sponsors: the German Stiftung für Deutsch-Polnische Zusammenarbeit, the German Physical Society via WE-Heraeus-Stiftung, the Polish Ministry of National Education (MEN), the International Science Foundation, the State Committee for Scientific Research (KBN), and the Physics Committee of the Polish Academy of Sciences. In this respect, the efforts of Professor Werner Rühl of Kaiserslautern and Professor Jan Stankowski of Poznań should especially be acknowledged.

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