

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE
QUANTUM OPTICS IV
JASZOWIEC, POLAND, JUNE 17-24, 1997

Editors of the Proceedings

Jan Mostowski
Arkadiusz Orłowski

WARSAW

**POLISH ACADEMY OF SCIENCES
INSTITUTE OF PHYSICS**

The Conference *Quantum Optics IV* was held in Jaszowiec, Poland from June 17 to June 24, 1997.

The Conference was organized by the Institute of Physics of the Polish Academy of Sciences and the Center for Theoretical Physics of the Polish Academy of Sciences.

PROGRAM COMMITTEE

I. Białynicki-Birula (Poland)
N. Bigelow (USA)
J.H. Eberly (USA)
M. Fedorov (Russia)
J. Mostowski (Poland)
K. Rzażewski (Poland)
L. Sirko (Poland)
H. Walther (Germany)

ORGANIZING COMMITTEE

I. Białynicki-Birula
J. Mostowski
K. Rzażewski
L. Sirko

SPONSORS

We wish to thank the following institutions for their contribution to the success of this Conference:

Committee for Scientific Research (Poland)
European Commission, Directorate General III
National Science Foundation (USA)
United States Air Force European Office of Aerospace Research and Development
Polish Physical Society
Committee of Physics of the Polish Academy of Sciences

PREFACE

This volume contains lectures presented at the Quantum Optics IV meeting which took place at Jaszowiec (Poland) from June 17 to June 24, 1997. The leading themes of the meeting were: cold atoms, strong laser field–atom interactions and quantum chaos. It turned out that the first topic got most attention. It is worth noting that our meeting took place *before* the announcement of the Nobel Prize in physics for 1997. This Nobel Prize was awarded to C. Cohen-Tannoudji, W. Philips and S. Chu for their contribution to cooling and trapping of atoms. Of particular interest were lectures on the “hot topic” of ultracold atoms forming Bose–Einstein condensate. This effect is often considered as a part of condensed matter physics but it became accessible to experiments due to progress in laser cooling of dilute atomic gases. Thus we have witnessed yet another example of a new subject encompassed by quantum optics. Some earlier examples include classical and quantum chaos. Although not directly related to quantum optics they draw from experimental possibilities provided by modern laser techniques. Our third theme: strong laser field–atom interactions is a more traditional subject of quantum optics.

Some 140 physicists from 13 countries participated in the meeting. We had 25 invited lectures, of which 18 are included in this volume. In addition there were 120 posters presented at two poster sessions. The conference offered an overview of the most important issues of quantum optics in its broad sense.

Organizers