

Proceedings of the Twelfth School on Theoretical Physics
“Symmetry and Structural Properties of Condensed Matter”

September 5–10, 2016, Rzeszów, Poland

Guest Editors:

Andrzej Wal, Paweł Zięba, Mirosław Łabuz, Vitalii Dugaev

WARSAW

POLISH ACADEMY OF SCIENCES
INSTITUTE OF PHYSICS

Organizing Committee:

Vitalii Dugaev (*Chairman*)

Igor Tralle (*Co-chairman*)

Andrzej Wal (*Secretary*)

Michał Inglot

Klaudiusz Majchrowski

Mirosław Łabuz

Wioletta Pańsko

Oleń Łopuszański

Ryszard Stagraczyński

Paweł Jakubczyk

Sławomir Wolski

Krzysztof Kucab

Paweł Zięba

Program Committee:

Józef Barnaś (Poland)

Igor Tralle (Poland)

Vitalii Dugaev (Poland)

James Louck (USA)

Barbara Lulek (Poland)

Karol Penson (France)

Tadeusz Lulek (Poland)

Evgeny Sherman (Spain)

Jamal Berakdar (Germany)

Evgeny Sheregii (Poland)

Jean-Pierre Gazeau (France)

Apostolos Voudras (UK)

Jacek Karwowski (Poland)

Vyacheslav Youkalov (Russia)

Supported by:

Marshal of the Podkarpackie Region

City of Rzeszów Office

Aviation Valley Association

Preface

In this issue of *Acta Physica Polonica A* we present original papers presented by the participants of the Twelfth School on Theoretical Physics “Symmetry and Structural Properties of Condensed Matter Physics SSPCM 2016”, which was organized by University of Rzeszow in cooperation with Rzeszow University of Technology on September 5-10, 2016 in Rzeszów (Poland). Twenty seven invited lectures were presented at this School by distinguished physicists from all over the world (Germany, Italy Japan, Poland, Portugal, Russia, Spain, UK and USA). More information on the topics, names of the lecturers and participants can be found on the web page of the School: <http://sspcm.ur.edu.pl>. We also gave a chance to young scientists and graduate students taking part in the School to present and discuss results of their own research in the form of posters and short oral contributions. Reports on these short presentations are included in this issue.

The series of the SSPCM Schools on Theoretical Physics was initiated about twenty five years ago by Professor Tadeusz Lulek, who was the main organizer and Chaiman of ten Schools - from the first one in Zajączkowo to the Tenth School in Myczkowce (Podkarpacie region). Five Schools were held during the Summer time in Myczkowce, and therefore, they are also known as “Myczkowce Schools”. The main idea of these Schools was to present new ideas, some hot results and advances in various fields of theoretical physics, often related to applications, at the level appropriate for graduate students and young researchers starting their scientific carrier. It is well known that this is not always an easy task due to complexity of new mathematical methods and their physical interpretation. We believe the School was successful and young people enjoyed taking part in it. We also believe that this tradition will be continued in the future, and we hope that more and more young participants from Poland and abroad will attend the next SSPCM Schools.

Andrzej Wal
Paweł Zięba
Mirosław Łabuz
Vitalii Dugaev