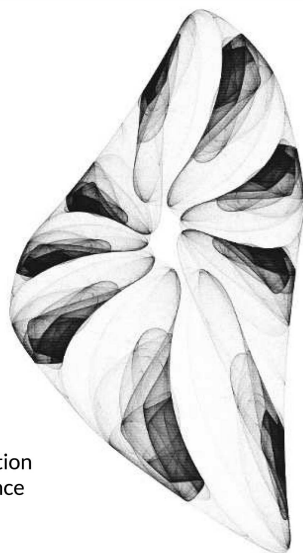


Proceedings of the 10th Workshop
on Quantum Chaos
and Localisation Phenomena

Warsaw, Poland, May 27–28, 2021
Online Conference



Patronage of Polish Physical Society

Editors of the Proceedings:

Leszek Sirko
Szymon Bauch

WARSAW

POLISH ACADEMY OF SCIENCES
INSTITUTE OF PHYSICS

The Conference was organized by

- Institute of Physics, Polish Academy of Sciences,
- Center for Theoretical Physics, Polish Academy of Sciences,
- Pro Physica Foundation.

Organising Committee

Afshin Akhshani	(IP PAS)
Szymon Bauch	(IP PAS)
Małgorzata Białous	(IP PAS)
Omer Farooq	(IP PAS)
Marek Kuś	(CTP PAS)
Michał Ławniczak	(IP PAS)
Paweł Masiak	(IP PAS)
Adam Sawicki	(CTP PAS)
Leszek Sirko — <i>Chairman</i>	(IP PAS)
Jerzy Wrochna	(IP PAS)

Objectives

- To assess achievements and to formulate directions of new research on quantum chaos and localisation.
- To bring together prominent experimental and theoretical physicists who share a common interest in quantum chaos and localisation phenomena.

Scope

Presentations will focus on the following topics:

- quantum chaos and nonlinear classical systems,
- quantum and microwave billiards,
- quantum and microwave graphs,
- atoms in strong electromagnetic fields — experiment and theory,
- chaos vs. coherent effects in multiple scattering,
- Anderson localisation,
- random lasers,
- quantum chaos and quantum computing,
- entanglement and noise.

Preface

The 10th jubilee Workshop on Quantum Chaos and Localisation Phenomena was held in Warsaw, Poland, on May 27–28, 2021, at the Institute of Physics of the Polish Academy of Sciences. Due to the coronavirus COVID-19 pandemic, the meeting was fully virtual and was conducted on the ZOOM platform. The Workshop was organized by the Institute of Physics of the Polish Academy of Sciences, the Center for Theoretical Physics of the Polish Academy of Sciences and the Foundation “Pro-Physica”. The first of these biennial workshops was organized in 2003. The selected articles of the invited lecturers, starting from the second Workshop, were published in *Acta Physica Polonica A* [1–8]. The main objectives of the Workshops are assessment of achievements and formulation of directions of new research on quantum chaos and localisation phenomena.

The Workshop gathered 35 officially registered participants from China, Colombia, Czech Republic, France, Germany, Israel, Mexico, Norway, Poland, Slovenia, Sweden, the United Kingdom, and the USA, representing experimental and theoretical physicists. Additionally, participants, mainly PhD students and doctors, had the opportunity to join the Workshop via the ZOOM platform. The lectures were also attended by not registered researchers and PhD students of the Institute of Physics and Center for Theoretical Physics on the Institute’s YouTube channel. During the meeting 20 invited lectures and 3 posters were presented. They were focused on the following topics: quantum chaos and non-linear classical systems, quantum and microwave graphs and billiards, localization phenomena, topological effects, and physics of low dimensional systems. Both theoretical and experimental problems from various fields of solid state, atomic and molecular, mathematical and statistical physics were discussed. It is noteworthy that, although most of the lectures were devoted to the theory of quantum chaos and many-body systems, there were also very interesting new topics such as topological effects, photonic crystals and chiral ensembles. As the meeting was held online, scientific discussions traditionally held during coffee breaks and social events, this time took place between the lectures and unexpectedly during visits to the “rooms”, where posters were displayed.

On behalf of the organizers, we would like to express our gratitude to all speakers and the authors of the poster presentations for their contribution to the success of the Workshop.

We present the Proceedings of the 10th Workshop on Quantum Chaos and Localisation Phenomena in which 9 invited articles of the Workshop participants are published.

The workshop organizers acknowledge a financial support from the Ministry of Education and Science (contract No. DNK/SN/513549/2021).

Szymon Bauch

Leszek Sirko

Editors of the Proceedings

- [1] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **109** (1), (2006)
- [2] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **112** (4), (2007)
- [3] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **116** (5), (2009)
- [4] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **120** (6-A), (2011)
- [5] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **124** (6), (2013)
- [6] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **128** (6), (2015)
- [7] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **132** (6), (2017)
- [8] L. Sirko, S. Bauch, *Acta Phys. Pol. A* **136** (5), (2019)