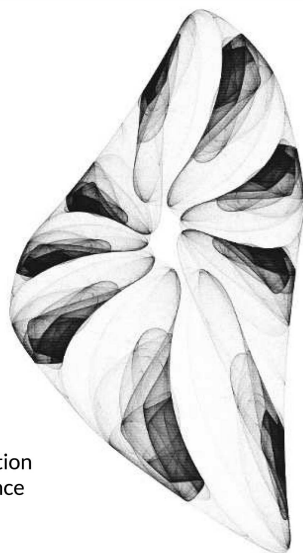


Proceedings of the 11th Workshop
on Quantum Chaos
and Localisation Phenomena

Warsaw, Poland, May 25–26, 2023
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)
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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 11th Workshop on Quantum Chaos and Localisation Phenomena was held in Warsaw, Poland, on May 25–26, 2023, at the Institute of Physics of the Polish Academy of Sciences. Although the end of the COVID-19 coronavirus pandemic was announced, due to its long-lasting effects and existing threats, the meeting was again fully virtual and took place 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. Selected articles from the invited lectures, starting from the second Workshop, were published in *Acta Physica Polonica A* [1–9]. The main objectives of the Workshops are to assess achievements and formulate directions for new research on quantum chaos and localisation phenomena.

The Workshop gathered 30 officially registered participants from Afghanistan, China, the Czech Republic, France, Germany, Israel, Poland, Sweden, the United Kingdom, and the USA, representing experimental and theoretical physicists. Additionally, about 20 participants, mainly Ph.D. students and doctors, had the opportunity to join the Workshop via the ZOOM platform. The lectures were also attended by non-registered researchers and Ph.D. students of the Institute of Physics and the Center for Theoretical Physics on the Institute’s YouTube channel. During the meeting, 18 invited lectures and 3 posters were presented. The presentations focused on the following topics: quantum chaos and non-linear classical systems, quantum and microwave graphs and billiards, localisation phenomena, topological effects, and physics of low-dimensional systems. In talks and poster presentations, theoretical and experimental problems from various fields of solid state, atomic and molecular, mathematical and statistical physics were discussed. It is noteworthy to mention 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, chiral ensembles, and — for the first time — applications of chaotic systems to modelling metamaterials. The meeting was held online, so scientific discussions that traditionally took place during coffee breaks and social events, this time took place between lectures and during visits to the “rooms” where the posters were displayed.

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

We present Proceedings of the 11th Workshop on Quantum Chaos and Localisation Phenomena, in which 11 invited articles of the Workshop participants are published.

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Szymon Bauch

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Editors of the Proceedings

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