

# Many-body Open Quantum Systems: From Atomic Nuclei to Quantum Optics

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(Organizers)

Small open quantum systems, whose properties are profoundly affected by environment, i.e., continuum of decay channels, are intensely studied in various fields of Physics (nuclear physics, atomic and molecular physics, mesoscopic physics, quantum optics, etc.). These different many-body systems, in spite of their specific features, have generic properties which are common to all weakly bound/unbound systems close to the threshold.

The objective of this workshop, the third in its kind, would be to bring together various physics' communities with shared interests, addressing similar universal few/many-body phenomena using common concepts and methodologies.

## Confirmed speakers:

Carl Bender, Washington University, St. Louis, USA

Title: PT-Symmetric Quantum Systems

Luca Celardo, Univ. Cattolica Brescia, Italy

Title: Superradiance transition in photosynthetic light-harvesting complexes

Maarten DeKieviet, University of Heidelberg, Germany

Title: PT-Symmetry Breaking in Helium

Rafael de la Madrid, Lamar University, Beaumont, USA

Title: Resonance expansions in terms of Gamow states

Barbara Dietz, TU Darmstadt, Germany

Title: Bound states in open sharply bent waveguides

Piroska Dömötör, University of Szeged, Hungary

Title: The Ulm sparrow problem: Effect of internal structure on particle transmission through an opening

Maxim Efremov, Ulm University, Germany

Title: Novel resonant states in three-body problem

Christian Forssén, Chalmers University of Technology, Gothenburg, Sweden

Title: The ab initio no-core shell model for nuclear structure and beyond

Eduardo Garrido, CSIC Madrid, Spain

Title: Continuum states with integral relations: The helium trimer with soft core potentials

Bettina Gertjerenken, University of Oldenburg, Germany  
Title: Nonlocal quantum superpositions via scattering of bright solitons

Mariagiovanna Gianfreda, University del Salento, Lecce, Italy  
Title: Nonuniqueness of the C operator in PT-symmetric quantum systems

Enno Giese, Ulm University, Germany  
Title: Differences between neutron and atom interferometry

Gaute Hagen, Oak Ridge National Laboratory, USA  
Title: Living at the edge of stability: the role of continuum and three-nucleon forces

Naomichi Hatano, University of Tokyo, Japan  
Title: Complex eigenvalue problem of the Liouvillian of an open quantum system

Robin Kaiser, Institut Non Linéaire de Nice, CNRS, Valbonne, France  
Title: Many body physics in Maxwell equations and superradiant forward scattering

Wolfgang Loeffler, University of Leiden, Netherlands  
Title: Twisted and entangled photons

Piotr Magierski, Warsaw University of Technology, Poland  
Title : Nonequilibrium properties of ultracold gases

Nicolas Michel, Oak Ridge National Laboratory, USA  
Title: Description of nuclear reaction observables including coupling to continuum

Frank Narducci, NASC, USA  
Title: Recoil induced resonances in an active magneto-optical trap

Markus Oberthaler, University of Heidelberg, Germany  
Title: Bifurcation - in the classical and quantum regime

George Papadimitriou, University of Arizona, Tucson, USA  
Title: *Ab initio* calculations of weakly bound nuclei in the Berggren basis

Ingrid Rotter, MPI Dresden, Germany  
Title: Exceptional points and width bifurcation in open quantum systems

Jimmy Rotureau, Chalmers University of Technology, Gothenburg, Sweden  
Title: Effective Field Theory for open quantum systems

Haik Simon, GSI-Darmstadt, Germany  
Title: Across the drip line, and exotic stepping stones

Stig Torsten Stenholm, KTH Stockholm, Sweden  
Title: To construct world bit by bit

Alexey Streltsov, University of Heidelberg, Germany

Title: How does an interacting many-boson system tunnel through a potential barrier to open space?

Vincenzo Tamma, Ulm University, Germany

Title: Interferometry with Bose-Einstein condensates in microgravity

Alexander Volya, Florida State University, Tallahassee, USA

Title: Investigating nuclear many-body dynamics using the Continuum Shell Model

Jan von Delft, University of München, Germany

Title: Quantum quench of Kondo correlations in optical absorption

Kazuhiro Yabana, University of Tsukuba, Japan

Title : Triple-alpha reaction rate: tunneling of three charged particles

Wojciech Żurek, LANL, Los Alamos, USA

Title: Topology in superposition