



The Abdus Salam  
**International Centre  
for Theoretical Physics**



# Workshop on Impurity Problems in Quantum Mixtures: from Ultracold Gases to Electron Matter

## Description:

How the properties of impurities are modified by their interaction with a surrounding medium is a fundamental question across several research areas and different physical systems. Yet, a common set of ideas and technical tools can be applied to these seemingly different frameworks, the investigation of one system yielding information on another.

## MORE DETAILS:

This conference aims to bring together leading experts in the multi-disciplinary study of impurity phenomena in a broad range of quantum systems, from ultracold atomic gases to strongly correlated electronic materials and heterostructures.

## TOPICS:

- Impurities and Polarons in Ultracold Quantum Gases
- Excitons, Polarons, and Exciton-Polaritons in 2D and Solid-State Systems
- Polaron Formation, Dynamics, and Non-Equilibrium Phenomena
- Impurities with Long-Range or Tunable Interactions
- Impurities as Quantum Probes of Many-Body Systems
- Quantum Simulation and Information Approaches to Impurity Physics

The workshop schedule will combine pedagogical and cross-disciplinary presentations with more technical ones, leaving ample time for spontaneous discussions and thus fostering new collaborations and approaches in the study of impurity problems in emerging quantum science platforms.

## SPEAKERS:

J. Arlt  
Aarhus University, Denmark  
C. Baroni  
IQOQI Innsbruck, Austria  
M. Berciu  
University of British Columbia, Canada  
A. Bergschneider  
University of Bonn, Germany  
G. Bruun  
Aarhus University, Denmark  
A. Camacho-Guardián  
UNAM, Mexico  
C. Chin  
University of Chicago, USA  
X. Cui  
Chinese Academy of Sciences, China  
E. Demler  
ETH Zurich, Switzerland  
C. Eigen  
University of Cambridge, UK  
D. Fausti  
UNITS, Italy and FAU Erlangen, Germany  
R. Fletcher

MIT, USA  
C. Franchini  
University of Vienna, Austria and University of Bologna, Italy  
D. Golež  
University of Ljubljana, Slovenia  
A. Imamoglu  
ETH Zurich, Switzerland  
M. Lebrat  
University of Harvard and JILA, USA  
F.M. Marchetti  
Autonomous University of Madrid, Spain  
P. Massignan  
Polytechnic University of Catalonia, Spain  
R. Schmidt  
Heidelberg University, Germany  
S. Skipetrov  
LPMMC and CNRS, France  
J. Tempere  
University of Antwerp, Belgium  
A. Widera  
RPTU Kaiserslautern-Landau and State Research Center OPTIMAS, Germany



**23 - 25 February 2026**



**Trieste, Italy**



## Application and Deadlines:

For applicants requesting financial and/or visa support:  
**30 November 2025**

For all other applicants:  
**7 January 2026**

## DIRECTORS:

L. Ardila  
University of Trieste, Italy  
F. Scazza  
University of Trieste, Italy  
M. Zaccanti  
Istituto Nazionale di Ottica del Consiglio Nazionale delle Ricerche (CNR-INO) and European Laboratory for Non-Linear Spectroscopy (LENS), Italy

## LOCAL ORGANISER:

M. Dalmonte, ICTP, Italy

## FURTHER INFORMATION:

E-mail: [smr4208@ictp.it](mailto:smr4208@ictp.it)

Web: <http://indico.ictp.it/event/11134/>

Female scientists are encouraged to apply.



## GRANTS:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries. There is no registration fee.

