



# EMMI Workshop: Exotic Quantum Matter: Measurement and Control (EQM-MC)



**30.Sep - 02.Oct 2026**

**Cod. Z67-26**

**Mod.:**

Face-to-face

**Edition**

2026

**Activity type**

Workshop

**Date**

30.Sep - 02.Oct 2026

**Location**

Miramar Palace

**Languages**

English

**Academic Validity**

30 hours

**Web**

<https://eqm-mc-conference.dipc.org/>

**Organising Committee**



## Description

This three-day EMMI workshop accompanies the four-week program on "Exotic Quantum Matter" organized at DIPIC as the inaugural event of the Sessions in Physics: Advancing Research and Knowledge program. It focuses on the exotic properties of quantum matter such as topological order, strong correlations, fractional excitations, long-range entanglement and, in particular, how to probe and control them using newly developed measurement and manipulation capabilities, including the quantum-gas microscope, STM-ESR, the quantum twisting microscope, or reconfigurable lattices. These tools have been developed for very different experimental systems (ultracold atoms in optical lattices, solid-state nanostructures, atoms or molecules on surfaces) and a particular interest of the workshop is highlight these new capabilities and how they allow to control quantum matter and how to characterize by measuring characteristics such as non-local order parameters, entanglement witnesses, entropies, or spatial and temporal correlation functions.

### ORGANIZING COMMITTEE:

- Francesca Ferlaino [Universität Innsbruck, Institut für Experimentalphysik,Technikerstrasse, Austria]
- Aran Garcia Lekue [DIPC - Donostia International Physics Center]
- Géza Giedke Lekue [DIPC - Donostia International Physics Center]
- Tobias Grass [DIPC - Donostia International Physics Center]
- Mohammad Hafezi [University of Maryland, USA]

### Objectives

The aim of the workshop is to foster exchange and explore the potential of state-of-the-art methods to create, probe, and manipulate quantum correlations beyond mean-field approaches.

### Course specific contributors



**Directed by**



**Aran Garcia-Lekue**

DIPC

---

## **Place**

### **Miramar Palace**

Pº de Miraconcha nº 48. Donostia / San Sebastián

Gipuzkoa