

Actividades Formativas IMEIO/ Educational Activities IMEIO

Título/Title: Semidefinite Programming and Applications in Quantum Information Theory
Organizador/Organizer: María García Díaz (maria.garcia.diaz@upm.es)
Profesores/Lecturers: María García Díaz (maria.garcia.diaz@upm.es)
Horas totales/Number of hours: 12
Lugar/Location: Onsite (ETSII, UPM).
Fechas/Dates: 09.02.2026-27.02.2026

Resumen/Summary: Semidefinite programming (SDP) is a powerful optimization framework with broad applications across physics, engineering, combinatorial optimization, and beyond. This course focuses on its role within quantum information theory, where many fundamental problems can be naturally formulated as SDPs. The reason lies in the close connection between the mathematical structure of quantum systems—described by positive semidefinite operators—and the core principles of semidefinite programming. The course explores a wide range of applications, including quantum state estimation, entanglement quantification, joint measurability, quantum channel estimation and discrimination, and quantum simulation.

¿Aceptarías que el curso se pudiera emitir por videoconferencia restringido a algunos alumnos del doctorado que no pudieran asistir presencialmente?
Would you accept that the course could be given by videoconference restricted to some doctoral students who could not attend in person? YES