COLLOQUIUM SERIES: Quantum Entanglement and the Geometry of Spacetime

ROBERTO EMPARAN

May 08, 2023
12:00 to 13:00
ICFO Auditorium

PROFILE:
Roberto Emparan earned his PhD in Physics from the University of the Basque Country. He has worked at the University of California in Santa Barbara, the University of Durham, and CERN. Since 2003, he has been an ICREA professor working at the Department of Quantum Physics and Astrophysics and the Institute of Cosmos Sciences at the University of Barcelona. His research focuses on the structure of spacetime, gravity, and black holes.

ABSTRACT:
The holographic principle, a fundamental concept in quantum gravity, suggests that spacetime is a geometric manifestation of quantum entanglement. This idea implies that classical objects like black holes and wormholes are, in essence, highly entangled quantum

systems. In this talk, I will explain what this means, and illustrate how entanglement is the key to understanding the geometry of space as an emergent notion. The talk will be geared towards those with a background in quantum physics but possibly less exposed to general relativity.

Hosted by: Antonio Acin