



Seminar

Optical lattice clocks: From Timekeepers to Spies of the Quantum Realm

Ana Maria Rey

JILA, NIST and University of Colorado



Time: 10:00 am, May.14, 2025 (Wednesday)

时间: 2025年5月14日 (周三) 上午10:00

Venue: Room w563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Zoom会议号: 813 7142 9081

密码: 155083

Abstract

Harnessing the behavior of complex systems is at the heart of quantum technologies. Precisely engineered ultracold gases are emerging as a powerful tool for this task. In this talk I will explain how ultracold strontium atoms trapped by light can be used to create optical lattice clocks – the most precise timekeepers ever imagined. I am going to explain why these clocks are not only fascinating, but of crucial importance since they can help us to answer cutting-edge questions about complex many-body phenomena and magnetism, to unravel big mysteries of our universe and to build the next generation of quantum technologies.

About the speaker

Prof. Ana Maria Rey obtained her bachelor's degree in physics in 1999 from the Universidad de los Andes in Bogota, Colombia. She pursued her graduate studies at the University of Maryland, College Park, receiving a Ph.D. in 2004. She then joined the Institute of Theoretical, Molecular and Optical Physics at the Harvard-Smithsonian Center for Astrophysics as a Postdoctoral Fellow from 2005 to 2008. She joined JILA, NIST and the University of Colorado Boulder faculty in 2008. She is currently a JILA and NIST fellow and a Professor Adjoint in the Department of Physics. Rey's research focuses on how to control and manipulate ultra-cold atoms, molecules and trapped ions for use as quantum simulators of solid state materials and for quantum information and precision measurements. Rey's recognition to her work include, among others a MacArthur Foundation Fellowship (2013), the Blavatnik National Awards for Young Scientists (2019), the National Academy of Science membership (2023) and the Presidential rank Award (2023).