



UNIVERSITÀ
DEGLI STUDI
FIRENZE

“Optical atomic clock and many-body quantum physics”

PROGRAMME

11:30: Colloquium

13:00: Lunch with the speaker (all participants are invited at LENS)

Enrico Fermi Colloquium

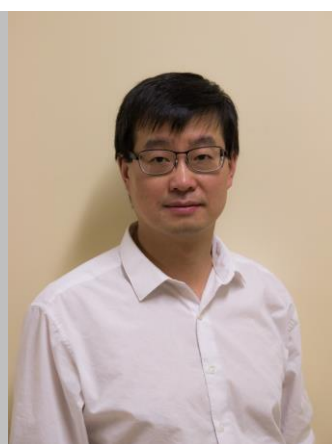
Friday 16 September 2016 11:30 a.m.



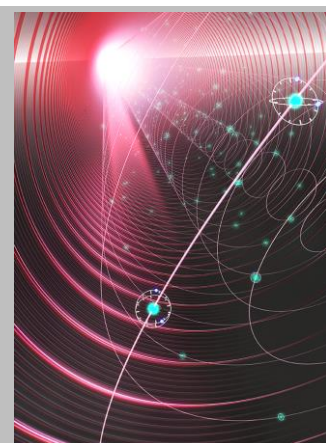
LENS - Via Nello Carrara 1

Sesto F.no (Firenze)

Conference room Querzoli



Jun Ye
JILA, National
Institute of Standards
and Technology and
University of
Colorado
Boulder, Colorado
80309-0440, USA



ABSTRACT

The relentless pursuit of spectroscopy resolution has been a key drive for many scientific and technological breakthroughs over the past century, including the invention of laser and the creation of ultracold matter. Our state-of-the-art laser now maintains optical phase coherence over multiple seconds and provides this piercing resolution across the entire visible spectrum. The new capability in control of light has enabled us to create and probe novel quantum matter via manipulation of dilute atomic and molecular gases at ultralow temperatures. For the first time, we control the quantum states of more than 1000 atoms so precisely that we achieve a more stable and accurate atomic clock than any existing atomic clocks, with both key clock characteristics reaching the 10^{-18} level. We use this precision measurement capability to explore novel many-body quantum states with the aim to develop the new frontier of quantum metrology. Such advanced clocks will allow us to test the fundamental laws of nature and enable a wide range of technological applications.

Klein Colloquium by Giacomo Inero: “Absolutely-Referenced Spectroscopy in the Mid IR”

