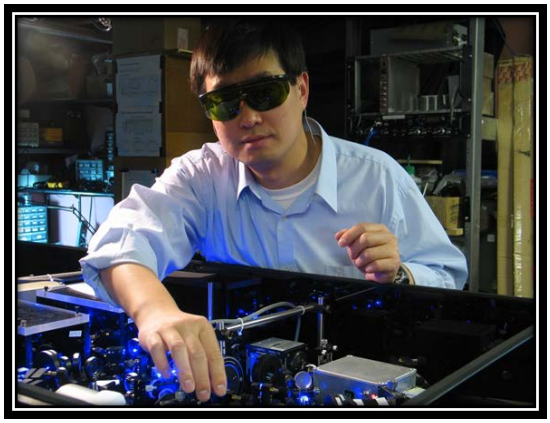
SPECIAL LECTURE

Yale University
Department of Physics

THE 40th ANNUAL HANAN ROSENTHAL MEMORIAL LECTURE

Professor Jun Ye
JILA, National Institute of Standards and Technology and University of Colorado



"Making the World's Best Clock."

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. State-of-the-art lasers now maintain optical phase coherence over many seconds and provide this piercing resolution across the entire visible spectrum. The new capability in control of light has enabled us to create and probe novel forms of 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 accurate and more precise atomic clock than any existing atomic clocks. With the clock accuracy and stability both reaching the 10^{-18} level, we now realize a single atomic clock with the best performance in both key ingredients necessary for a primary standard. We are also on the verge of integrating novel many-body quantum states into the frontiers of precision metrology, aiming to advance measurement beyond the standard quantum limit. Such advanced clocks will allow us to test the fundamental laws of nature and find applications among a wide range of technological frontiers.

Monday, February 24, 2014

Tea will be served at 3:30 p.m. in the 3rd Floor Lounge, SPL

The lecture will be held at 4:00 P.M.
In the Sloane Physics Laboratory (SPL), Room 59
at 217 Prospect Street, New Haven, CT.
All interested persons are invited to attend the lecture