

SEMINAR ANNOUNCEMENT

國立中山大學物理系111學年度第二學期專題演講

Application of Rydberg-based quantum sensors using atomic vapors

陳易馨 助理教授

Dr. Yi-Hsin Chen

Assistant Professor, Department of Physics,
NSYSU

Abstract

I will present an overview of electromagnetically induced transparency (EIT), highly excited Rydberg-state EIT, and quantum-state manipulation. We have performed the high-contrast Rydberg-state EIT measurements by considering the effects of laser polarization, laser intensity, magnetic field, optical density, and the optical pumping on the thermal rubidium medium. The spectral feature is helpful to probe the energy level shifts due to the external electric field or the atomic interactions. Optical nanofibers, photonic crystal fibers, microcells, and waveguides are some of the applications of nonlinear optics in quantum information science. With Rydberg atoms in such miniaturized devices, we are able to generate multiple quantum-bits and quantum gates due to the strong atom-atom interaction. Finally, a proposal of building an array of Rydberg atoms in optical waveguides will be discussed.

Time Feb. 16, THU. 14:10 **Venue** PH2006