Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Cesium atom ground state coherence created by an optical frequency comb laser[1] WANG-YAU CHENG, TSUNG-HAN WU, SHENG-HUEI LU, P. O. Box 23-166, Taipei, 106, Taiwan — Quantum interference resolved by the coherent laser modes from a mode-locked laser is significant in demonstrating femtosecond-laser based high resolution spectroscopy. Moreover, the high Q frequency discriminator resulted from quantum interference phenomenon could possibly serve for comb laser repetition rate stabilization. We discovered a 5-Hz width transparent window when the repetition rate of our optical frequency comb laser [1] was adjusted to be on resonance of cesium atom ground state hyperfine transition. We showed that cesium atom ground state coherence might be created by the comb laser modes, based on the observation of Zeeman effects. We performed our experiment with 8700 Pascal Neon buffer gas and 100°C (1 mK instability) wall temperature. Frequency shift by wall temperature and the other effects will be presented.

[1] Appl. Phys. B **92**, 13-18 (2008).

[1]This work is supported by NSC 96-2112-M-001-002-MY3.

Wang-Yau Cheng
P.O. Box 23-166, Taipei, 106, Taiwan

Date submitted: 27 Mar 2009 Electronic form version 1.4