Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Electromagnetically induced transparency in a multi-level system of Doppler-broadened Cesium atom[1] CHIN-CHUN TSAI, MING-TSUNG LEE, RAY-YUAN CHANG, Department of Physics, National Cheng-Kung University, Taiwan — Doubly dressed electromagnetically induced transparency in a multi-level ladder-type system of Doppler-broadened cesium atom is observed. These doubly-dressed states are established by using a strong coupling laser and a moderate probe laser in a multi- level atomic configuration. The probe laser was locked at the hyperfine transition $|6S_{1/2}, F'' = 4\rangle \leftrightarrow |6P_{3/2}, F' = 4\rangle$ of Cs atom while the coupling laser scanned from $|6P_{3/2}, F'\rangle$ levels across the $|8S_{1/2}, F = 3\rangle$ and $|8S_{1/2}, F = 4\rangle$ levels. These two laser beams were counter-propagated and overlapped inside the Doppler-broadened cesium cell under room temperature. Hyperfine levels of $|6P_{3/2}, F'\rangle$ serve as a doubly-dressed intermediated states for this ladder-type transitions. The absorption spectra of different probe laser intensity are investigated. Numerical simulation based on solving the steady-state Bloch equations can fit the observed spectrum well.

[1]This work is supported by the National Science Council, Taiwan (grand no. NSC95-2112-M-006-012-MY3).

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Date submitted: 21 Jan 2009 Electronic form version 1.4