

Abstract Submitted  
for the DAMOP15 Meeting of  
The American Physical Society

**Ultra-narrow EIA spectra of  $^{85}\text{Rb}$  atom in a degenerate Zeeman multiplet system** HAFEEZ UR REHMAN, MUHAMMAD MOHSIN QURESHI, Chosun University, HEUNG-RYOUL NOH, Chonnam University, JIN-TAE KIM, Chosun University — Ultra-narrow EIA spectral features of thermal  $^{85}\text{Rb}$  atom with respect to coupling Rabi frequencies in a degenerate Zeeman multiplet system have been unraveled in the cases of same ( $\sigma^+ - \sigma^+$ ,  $\pi \parallel \pi$ ) and orthogonal ( $\sigma^+ - \sigma^-$ ,  $\pi \perp \pi$ ) polarization configurations. The EIA signals with subnatural linewidth of  $\sim 100 \text{ kHz}$  even in the cases of same circular and linear polarizations of coupling and probe laser have been obtained for the first time theoretically and experimentally. In weak coupling power limit of orthogonal polarization configurations, time-dependent transfer of coherence plays major role in the splitting of the EIA spectra while in strong coupling power, Mollow triplet-like mechanism due to strong power bring into broad split feature. The experimental ultra-narrow EIA features using one laser combined with an AOM match well with simulated spectra obtained by using generalized time-dependent optical Bloch equations.

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Date submitted: 29 Jan 2015

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