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Electromagnetically induced transparency in a Cs 6S-8S two-photon transition[1] CHIN-CHUN TSAI[2], HSIANG-CHEN CHUI, YI-CHIH LEE, Institute of Electro-Optical Science and Engineering, National Cheng-Kung University, Tainan, Taiwan, RAY-YUAN CHANG, YING-YU CHEN, YI-HSIU CHANG, Department of Physics, National Cheng-Kung University, Tainan, Taiwan — We report the investigation of V-type electromagnetically induced transparency (EIT) in a Cs 6S-8S two-photon transition. This EIT occurs only under a very high coupling intensity due to the weak coupling of two-photon transition. In our experiment, an external cavity diode laser frequency stabilized on the Cs hyperfine transition $|6^2S_{1/2}, F = 4\rangle \rightarrow |6^2P_{3/2}, F = 5\rangle$ is served as a pumping field. The coupling field is a high power tunable Ti:sapphire laser which scanned through the two-photon transitions of Cs $|6^2S_{1/2}, F = 4\rangle \rightarrow |8^2S_{1/2}, F = 4\rangle$ at 822 nm. The coupling laser was retro- reflected through a confocal lens system and overlapped with the pump laser at the center of a temperature stabilized Cs cell. The cascade fluorescence from $|7^2P_{3/2}\rangle \rightarrow |6^2S_{1/2}\rangle$ and the power of transmitted pump laser were monitored simultaneously. An EIT signal of the pump field has been observed while the coupling laser frequency is resonant to the two-photon transition.

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