ANISOTROPY-DEPENDENT POLARIZATION SPECTROSCOPY USING A TWO-PHOTON PUMP-PROBE TECHNIQUE

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We have experimentally investigated the anisotropy-dependent polarization spectra for the ^{133}Cs $6s^2S_{1/2} \rightarrow 6p^2P_{3/2} \rightarrow 10s^2S_{1/2}$ transition using a two-photon two-color pulsed pump-probe technique. In the investigation, circular and linear polarization degrees were measured to extract the anisotropy-dependent depolarization cross sections in the excited $6p^2P_{3/2}$ level cesium atoms due to collisions with the ground-level argon atoms over the Zeeman coherences. We also studied anisotropy oscillations during the pump-probe overlap time in the excited state cesium due to the coupling of nuclear momentum to the electronic angular momentum. The spectra show strong depolarization of the $6p^2P_{3/2}$ level and the values for the measured depolarization cross sections are in good agreement with experiment and theoretical predictions.

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