Hyperfine Quantum Beats Observed in Cs Vapor under Pulsed Dye Laser Excitation*

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We report observation of hyperfine quantum beats in the light emitted by the $7^2P_{3/2}$ level of Cs^{133} after excitation by a short resonant dye laser pulse. Frequency analysis of the beats provides a measurement of the hyperfine splittings in agreement with previous work. The usefulness of quantum-beat detection as a new method of laser spectroscopy without complications from the Doppler effect is discussed.