

Abstract Submitted  
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**Hyperfine Quantum Beat Spectroscopy of the Cs 8p level with Pulsed Pump-Probe Technique**<sup>1</sup> BURCIN BAYRAM, OLEG POPOV, STEPHEN KELLY, PATRICK BOYLE, ANDREW SALSMAN, Miami University — Quantum beats arising from the hyperfine interaction were measured in a three-level excitation ( $\lambda$ ) scheme: pump for the  $6s^2S_{1/2} \rightarrow 8p^2P_{3/2}$  and stimulated emission pump (probe) for the  $8p^2P_{3/2} \rightarrow 5d^2D_{5/2}$  transitions of atomic cesium. In the technique, pump laser instantaneously excites the hot atomic vapor and creates anisotropy in the  $8p^2P_{3/2}$  level, and probe laser comes after some time delay. Delaying the probe time allows us to map out the motion of the polarized atoms like a stroboscope. According to the observed evolution of the hyperfine structure dependent parameters, e.g. alignment and atomic polarization, by delaying the arrival time of the stimulated emission pump laser (SEP), precise values of the magnetic dipole and electric quadrupole coefficients are obtained with an improved precision over previous results. The usefulness of the PUMP-SEP excitation scheme for the polarization hyperfine quantum beat measurements without complications from the Doppler effect will also be discussed.

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