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Numerical studies of photoelectron angular distributions in near-resonant two-photon ionization from hyperfine coherent superposition states[1] A.K. MILLS, D.S. ELLIOTT, Purdue University — We present numerical studies of photoelectron angular distributions for near-resonant two-photon ionization from a prepared coherent superposition of atomic hyperfine components of the ground state. The photoelectron angular distributions exhibit dramatic variation as a function of the superposition state composition, polarizations of the two-color laser field, and detuning from the intermediate hyperfine states. We discuss the capability of current angle-resolved detection systems to measure the coherence of an ensemble of atoms in a prepared atomic beam, and we discuss possible studies of decoherence in such systems.

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Dan Elliott
Purdue University

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