Abstract Submitted
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Sensitive Investigation of Radiation Trapping in an Atomic Vapor using the Hanle Effect[1] JOHN MCHUGH, RENCH DAVID, BURCH PETER, MICHAEL MCCLIMANS, RONALD STITES, SAMIR BALI, Department of Physics, Miami University — Radiation Trapping refers to the re-absorption of spontaneously emitted photons in an atomic vapor. The decoherence introduced by reabsorbed spontaneous emission significantly affects a vast variety of important experiments that rely on the preparation of coherent atomic media, such as in the field of quantum computing. Recently interest has focused on devising experimental techniques that are capable of detecting extremely small amounts of radiation trapping in atomic samples. Here, we investigate the possibility of sensitively detecting the presence of radiation trapping in an atomic vapor by using the Hanle effect which measures the coherence of atomic energy levels at zero magnetic field. It is expected that the slight decoherence caused by small amounts of radiation trapping should lead to a measurable loss of coherence in the Hanle signal. We report our experimental progress on this problem.

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Samir Bali
Department of Physics, Miami University

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