

Abstract Submitted
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Electromagnetically Induced Transparency Experiments for the Advanced Undergraduate Laboratory: Suppression of Polarization Impurity and Stray Magnetic Fields¹ KALEB CAMPBELL, RICHARD JACKSON, MATTHEW VAN VLEET, KODI KUHNASH, BRADLEY WORTH , AMANDA DAY, SAMIR BALI, Miami University — We investigate electromagnetically induced transparency (EIT) and electromagnetically induced absorption (EIA) in rubidium vapor using a single laser beam and a scanning magnetic field co-aligned with the laser propagation direction. We show that polarization impurity, stray magnetic fields and imperfect optical alignments cause broadening of the EIT/EIA signal and other spurious effects. We describe a systematic approach to minimizing these undesired effects, which produces EIT/EIA signals nearly two orders of magnitude narrower than the natural linewidth.

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