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Diffusion of atomic coherence in atomic vapor cells DAVID PHILLIPS, YANHONG XIAO, IRINA NOVIKOVA, RONALD WALSWORTH, Harvard-Smithsonian — Diffusion plays an important role in establishing the equilibrium ground state coherence in rubidium vapor cells, of relevance to Coherent Population Trapping (CPT) as used in small atomic clocks, as well as Electromagnetically Induced Transparency (EIT), and slow and and stored light. Here, we present experimental studies of the effects of coherence diffusion utilizing several techniques including the application of magnetic field gradients to destroy coherence that diffuses away from the laser beam; as well as the retrieval of multiple pulses from stored light, in which coherence returns to the volume of the laser beam due to diffusion.

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