

Abstract Submitted
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Diffusion-Induced Ramsey Narrowing YANHONG XIAO, IRINA NOVIKOVA, DAVID PHILLIPS, RONALD WALSWORTH, Harvard-Smithsonian — Diffusion-induced Ramsey narrowing is a general phenomenon in which diffusion of coherence in and out of an interaction region such as a laser beam induces spectral narrowing of the associated resonance line shape. We will present an intuitive analytical model, detailed numerical calculations, and experiments illustrative of this spectral narrowing effect. Diffusion-induced Ramsey narrowing occurs commonly in optically interrogated atomic systems and may also be relevant to quantum dots and other solid-state spin systems.

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