

Abstract Submitted
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Measurement of Dicke-narrowed optical transitions in warm alkali vapor for different buffer gas pressures¹ KEFENG JIANG, JIANQIAO LI, KEN DEROSE, LINZHAO ZHUO, SAMIR BALI, Miami University — We demonstrate the quadratic dependence on the relative pump-probe beam angle of the electromagnetically induced transparency narrowed transition linewidth - a defining signature of Dicke narrowing of the optical transition linewidth. We vary the buffer gas pressure thus varying the atomic spatial localization and hence the size of the quantization box causing the Dicke narrowing. By carefully defining the zero-value for the relative angle where the linewidth is measured to be a minimum, we find that our data agrees with the theory better than ever before, with no fit-parameters. A Ramsey-like measurement of ground state decay rates between hyperfine and Zeeman sub-levels is performed to investigate the lower limit on the EIT linewidth for case where the pump and probe are perfectly collinear.

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