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Exploring the robustness of a noise correlation resonance in a Zeeman EIT system SHANNON O'LEARY, Lawrence University, MICHAEL CRESCIMANNO, Youngstown State University, HENRY STREHLOW, Lawrence University, CHAD SNIDER, Youngstown State University — Using a single diode laser with large phase noise (linewidth ∼100MHz) resonant with Zeeman EIT in rubidium vapor, we examine intensity noise correlations of orthogonally-polarized laser components. A sharp correlation feature (∼100 Hz) is shown to be power-broadening resistant at low powers. However, the limitations of this resistance are revealed, with the onset of a power-broadening regime once a threshold power is crossed. Possible mechanisms for this broadening, due to decoherence of the ground state superposition, are experimentally explored and results are compared to a model. Understanding the limits of this noise correlation feature is essential to practical applications such as magnetometry.

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