Abstract Submitted
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Light scattering dynamics on the $F = 1 \rightarrow F' = 0$ transition in a high-density ultracold atomic gas of ^{87}Rb[1] S. BALIK, A. WIN, Old Dominion University, I.M. SOKOLOV, D.V. KUPRIYANOV, St. Petersburg State Polytechnic University, M.D. HAVEY, Old Dominion University — Experimental study of light scattering dynamics for atomic densities near the so-called Ioffe Regel boundary is crucial in exploration of current areas of research such as light localization and atomic physics based random lasers. We report experimental results on light scattering studies in an ultracold and high density (5 x 10^{13} atoms/cm^3) gas of ^{87}Rb atoms. Spectral and probe intensity dependent measurements of the time-evolution of light scattered on the $F = 1 \rightarrow F' = 0$ transition show strong Zeeman optical pumping effects that causes relatively short lived transients and dynamical evolution from high to low optical depths, despite the initally high atomic density. Comprehensive experimental results ranging over an order of magnitude in atomic density, probe laser intensity and about $\pm$ 20 MHz detuning from atomic resonance will be reported and discussed.

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