

Abstract Submitted
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Coherent Rayleigh-Brillouin Scattering in High Intensity Laser Fields BARRY CORNELLA, SERGEY GIMELSHEIN, ERC Inc., TAYLOR LILLY, University of Colorado Colorado Springs, ANDREW KETSDEVER, Air Force Research Laboratory — We have performed coherent Rayleigh-Brillouin scattering (CRBS) experiments on collisional gasses subject to laser intensities beyond those considered perturbative to the gasses' thermodynamic parameters. CRBS is a four wave mixing scheme traditionally used for gas diagnostic applications when utilizing low intensity laser pulses. In these experiments high intensity laser pulses are used which yield signal lineshapes inconsistent with perturbative theory. Gas heating, weak ionization, and three dimensional effects are discussed as possible nonlinear optical effects which would have to be accounted for in order to model the high intensity regime. The cause of this altered lineshape may furthermore be used to diagnose the full effect of the laser pulses on the gas.

Taylor Lilly
University of Colorado Colorado Springs

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