

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Measurement of laser-induced molecular alignment in cold, low density targets using femtosecond degenerate four wave mixing¹ XIAOMING REN, Kansas State University, VARUN MAKHIJA, VINOD KUMARAPPAN — A femtosecond degenerate four wave mixing (DFWM) technique for measuring the laser induced non-adiabatic alignment of asymmetric top molecules in a dilute gas jet is reported. The alignment is probed using three beams in a folded BOX-CARS geometry. By generating the three beams using a physical mask in a single probe beam, automatic overlap in space and time is obtained. By scanning the pump-probe delay and measuring the background-free DFWM signal, the alignment of rotationally-cold and low-density molecular targets can be rapidly characterized. We demonstrate the technique by measuring the alignment low-density iodobenzene in a high-pressure helium jet. This scheme can also be used with arbitrarily-shaped aligning pulses and pulse sequences, and for a wide variety of molecules.

¹This work is supported by the US Department of Energy.

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Date submitted: 04 Feb 2011

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