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Optimizing impulsive rotational wave packet excitation for molecular phase modulation[1] OMID MASIHZADEH, Colorado State University, MARK BAERTSCHY, University of Colorado at Denver, RANDY BARTELS, Colorado State University — The full transient macroscopic linear optical susceptibility tensor induced in a transiently aligned molecular gas by a single, linearly polarized intense alignment pulse is studied. We determine the optimal properties of the pulse that forms the rotational wave packet. Significantly, we demonstrate that the optimal pulse for phase modulation differs from the optimal alignment pulse. We are extending our studies of molecular phase modulation to excitation by pulse sequences. Finally, the limited information about rotational wave packets obtained by measuring the linear optical susceptibility can be augmented by also measuring the time-varying nonlinear optical susceptibilities.

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