Abstract Submitted
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High Harmonic Spectroscopy with oriented molecules[1] E. FRUMKER, Joint Attosecond Science Laboratory, University of Ottawa and National Research Council of Canada, N. KAJUMBA, Max-Plank Institute of Quantum Optics, J.B. BERTRAND, H.J. WORNER, C.T. HEBEISEN, Joint Attosecond Science Laboratory, University of Ottawa and National Research Council of Canada, P. HOCKETT, M. SPANNER, S. PATCHKOVSKII, Steacie Institute for Molecular Science, National Research Council of Canada, G.G. PAULUS, Department of Physics, Texas A&M University, D.M. VILLENEUVE, P.B. CORKUM, Joint Attosecond Science Laboratory, University of Ottawa and National Research Council of Canada, JASLAB TEAM — We report the first measurement of high harmonics from oriented gas samples. We show that attosecond and re-collision science provides a detailed and sensitive probe of molecular asymmetry. On each 1/2 cycle of an intense light pulse, laser-induced tunnelling extracts an electron wave packet from the molecule. When the electron wave packet recombines, alternately from one side of the molecule or the other, its amplitude and phase asymmetry determines the even and odd harmonics radiation that it generates. We determine the phase asymmetry of the attosecond XUV pulses emitted when an electron recollides from opposite sides of the CO molecule, and the phase asymmetry of the recollision electron just before recombination.

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