

Abstract Submitted  
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**Investigation of coupled nuclear and electronic motion in H<sub>2</sub> photoionization**<sup>1</sup> ANNA WANG, ANDREI KAMALOV, PHILIP BUCKSBAUM, JAMES CRYAN, Stanford PULSE Institute, SLAC National Accelerator Laboratory, VLADISLAV SEROV, Department of Theoretical Physics, Saratov State University, ALEXANDER BRAY, ANATOLI KHEIFETS, Research School of Physical Sciences, The Australian National University — We investigate coupled nuclear and electronic dynamics in the photoionization time delays of H<sub>2</sub>. We use a RABBITT technique to measure the photoionization time delays for several vibrational states of H<sub>2</sub><sup>+</sup> across a wide range of photoelectron kinetic energies. We observe discrepancies between our measured photoionization delays and a theoretical model which incorporates the vibrational state dependent ionization potential, but neglects motion of the nuclei. This difference between measurement and theory might indicate time variation of the scattering potential caused by nuclear dynamics. We explore the relative importance of these dynamics near the ionization threshold.

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