

Abstract Submitted  
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**Vibrationally Assisted Below Threshold Ionization** SPENCER HORTON, YUSONG LIU, State University of New York at Stony Brook, PRATIP CHAKRABORTY, SPIRIDOULA MATSIKA, Temple University, THOMAS WEINACHT, State University of New York at Stony Brook — We performed time-resolved UV pump (4.8 eV) and VUV probe (8 eV) measurements of internal conversion of 1,3-cyclohexadiene (CHD). Our measurements reveal a substantial ionization of the hot ground state, following internal conversion, despite the fact that our probe photon energy is below the ionization potential (8.25 eV). With the aid of electronic structure calculations, we interpret our results in terms of vibrationally assisted below threshold ionization, where vibrational energy is converted to electronic energy. The effect relies both on having vibrational modes which can lead to this conversion, and exciting these modes during the internal conversion. We contrast our measurements in CHD with another similar molecule, 1,3-cyclooctadiene (COD), for which we don't see the effect.

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