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Studying Ultrafast Internal Conversion Dynamics in Ethylene using ultrafast VUV-XUV pulses CHAMPAK KHURMI, TOM ALLISON, TRAVIS WRIGHT, ADAM STOOKE, ROGER FALCONE, ALI BELKACEM, ULTRAFAST X-RAY SCIENCE LABORATORY TEAM — This talk will present our recent efforts to better understand ultrafast internal conversion dynamics in *ethylene* (C_2H_4). *Ethylene* is a prototypical double bond molecule. Theoretical calculations predict that after $\pi \rightarrow \pi^*$ excitation (161nm), *ethylene* relaxes to its ground state through two conical intersections. Our recent time resolved photoion yield experiments provide confirmation of these two distinct non-radiative decay paths and their branching ratio in agreement with theoretical predictions. To further understand the elimination channels of molecular hydrogen from the vibrationally hot ground state of C_2H_4, our efforts to develop time resolved photoelectron spectroscopy in the VUV-XUV domain will also be discussed.

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