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Session V01: Poster Session III 4pm-6pm CDT
4:00 PM, Thursday, June 3, 2021

Abstract: V01.00037 : Wavelength dependence in strong field ionization of water*

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It has recently been shown that strong field multiple ionization of water depends on the duration and intensity of the laser pulse. While the polariz neutral water is isotropic, the polarizability of the molecular ions can be significant and evolve in time. If the molecular ions spend enough time in dynamic alignment can reorient them and modify the yield of dissociating fragments as a function of angle relative to the polarization of the laser motion is one way that the polarizability of the molecular ions increases. Here, we study strong field ionization of water in the long pulse regime v dynamic alignment and unbending are known to contribute at 800 nm, and we tune the laser wavelength to modify coupling between the states o monocation. A resonance between the X and A states at 660 nm should excite the monocation and initiate unbending motion, but our results car explained without considering the dynamics and structure of the dication and trication. To conduct these measurements, we utilize laser pulses v duration of 40 fs and central wavelengths of 660 nm, 800 nm, and 1330 nm to multiply-ionize an effusive molecular beam of water. The resulting fragments are detected using a velocity map imaging apparatus. Our results provide additional clues about the strong field ionization of water.

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