

Abstract Submitted  
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**Ultraslow Dissociation of the  $\text{H}_2^+$  Molecular Ion via Two-color Ultrafast Laser Pulses** BRADLEY MOSER, GEORGE GIBSON, University of Connecticut — We demonstrate a new mode of  $\text{H}_2^+$  photodissociation in an intense two-color laser field. Bond-softening and vibrational-trapping of the hydrogen molecular ion in intense single-color laser fields are processes that are well studied and understood in detail. In the past few years, two-color fields have received increasing attention. Our experiment shows that  $\text{H}_2^+$  ions experience ultraslow dissociation when bond-softened by the superposition of 800-nm and 400-nm ultrafast laser pulses in a narrow intensity range. By running theoretical simulations and examining two-color field-dressed adiabatic potential energy curves, we support this interpretation of near-zero kinetic energy release. Furthermore, we show that the shift to lower energy of a known bond-softened peak can be explained by the influence of a two-color field induced potential well.

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