

Light-induced dynamics of molecules probed by an ultrafast stopwatch

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We introduce an ultrafast stopwatch to probe the light-induced dynamics of molecules by using a polarization-skewed multicycle femtosecond laser pulse, where the starting and stopping arms are constructed by reading the momenta of the ejected electrons and ions measured in coincidence. Pathway-resolved dissociative single and double ionization of the lightest hydrogen molecules are investigated to demonstrate the robust of the stopwatch. The spatiotemporal controlled polarization-skewed pulse is also used to manipulate the parallel and perpendicular transitions in molecules and thus the light-induced reactions.

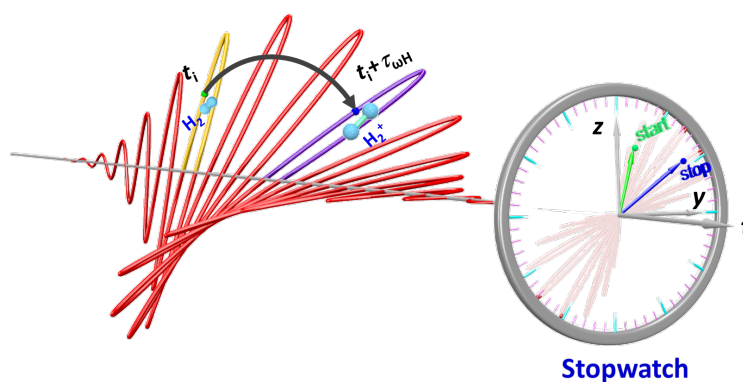


Fig. 1: Schematic illustration a stopwatch to clock the ultrafast dynamics of molecules.

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