Quantum Dynamics in Tailored Intense Fields

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## Charge migration in propiolic acid and its dephasing by the coupling to the nuclear motion

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A particular charge migration dynamics, driven only by the electron correlation, occurs in the propiolic acid molecule after the ionization of its HOMO orbital. This dynamics consist of an oscillation of the charge between its carbon triple bond and its carbonyl oxygen with a period of 6.2 fs. Performing fully quantum coupled electron-nuclear dynamics calculation, taking into account all 26 valence electrons and all 15 nuclear degrees of freedom, we show that the charge migration survives the decoherence induce by the nuclear motion long enough to be observed and controlled.

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