Attosecond pump-probe of doubly excited states in helium

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— Pump–probe experiments using two attosecond light pulses promise to provide unprecedented temporal resolution of electronic wave packet dynamics and have thus been called the “holy grail” of attosecond physics. Their experimental realization has up to now been out of experimental reach because of the limited intensity of attosecond sources. We study such setups for probing doubly excited states of helium, which present a prototypical example for correlated electron dynamics. We will present schemes to achieve sufficient yields for the experimental realization of such a setup. Furthermore, we will discuss the novel information that can be gained about the dynamics of the system and that is not available in conventional spectroscopy.