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Coherent Control About a Conical Intersection[1] CHELSEA LIEKHUS-SCHMALTZ, GREGORY MCCRACKEN, ANDREAS KALDUN, JAMES P. CRYAN, PHILIP H. BUCKSBAUM, Stanford Univ — Conical intersections (CIs) are degeneracies between molecular potential energy surfaces that occur in essentially all molecules with more than three atoms. Many studies have established that CIs allow for non-Born-Oppenheimer (non-adiabatic) molecular dynamics. In addition, CIs have many useful attributes for coherent control that have not been fully studied. Here we demonstrate two modes of control around a CI that make use of these properties. The first method uses a continuous light field, resonant absorption, and stimulated emission to control the population on two intersecting electronic states. The second method uses a pulsed light field and the geometric phase accumulated by a wavepacket traversing a CI to control the shape of the wavepacket.

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