Toward Full Spatiotemporal Control on the Nanoscale

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We introduce an approach to implement full coherent control on nanometer length scales. It is based on spatiotemporal modulation of the surface plasmon polariton (SPP) fields at the thick edge of a nanowedge. The SPP wavepackets propagating toward the sharp edge of this nanowedge are compressed and adiabatically concentrated at a nanofocus, forming an ultrashort pulse of local fields. The profile of the focused waveform as a function of time and one spatial dimension is completely coherently controlled.