Experiment: Revival structures for I$_2$

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Experimental

- laser: 800 nm, 80 mJ/pulse, 50 Hz
  - 70% $\rightarrow (\omega_{\text{align}})$ compressed to 1-10 ps
  - 30% $\rightarrow (\omega_{\text{probe}})$ compressed to 100 fs, attenuated to 1.2 mJ/pulse;
    Coulomb explosion
- I$_2$ seeded in Ne; 2D imaging
- $\omega_{\text{align}} \parallel$ to MCP, $\omega_{\text{probe}} \perp$ to MCP
- delay $\Delta t = t_{\text{probe}} - t_{\text{align}}$

Results

- $\Delta t = -17$ ps (a): no angular dependence
- $\Delta t = 0$ ps (b): nonisotropic ion image
- $\Delta t = 212$ ps (c) and $\Delta t = 220$ ps (d): rapid changes in angular distribution
- strong revival at $T = 450$ps = $1/2B_{I_2}c$ $B_{I_2} = 0.037$cm$^{-1}$
- other rephasings at $T/4, T/2, 3T/4$
- for alignment at $\Delta t = 0$ ps: 3-5 ps pulse duration optimal
- for revivals: 1-3 ps optimal
- stronger alignment with higher pulse energy