

[Previous Story](#) / [Volume 21 archive](#)

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[Title and](#)

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In a flash. To capture an unblurred image of a hummingbird, you can flash a strobe light at the same frequency as its fluttering wings. A similar "stroboscope" method uses sub-femtosecond light pulses synchronized with an oscillating laser field to repeatedly ionize electrons at the same moment in the laser's cycle and get clean images.

hundred attoseconds (10^{-18} seconds) long. The researchers synchronized the pulse train with the oscillations of a relatively weak infrared laser, so that their cloud of helium atoms received a strong, ionizing "kick" at a precise time during each laser cycle. Each attosecond pulse released a few electrons, some of which were thrown back against their atoms before being pushed sideways and detected.

Accumulating data from many ionization events, the team created clean images of the quantum state of electrons ionized at a single moment in the laser oscillation cycle. The images are the first of their kind that show such controlled electron-atom scattering. The team calls their

Coherent Electron Scattering Captured By an Attosecond Quantum Stroboscope

J. Mauritsson, P. Johnsson, E. Mansten, M. Swoboda, T. Ruchon, A. L'Huillier, and K. J. Schafer

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[Previous Story](#) / [Volume 21 archive](#)