Lightwave Electronics

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Abstract

Latest progress in ultrafast optics allows us to accelerate electrons in solids directly by the carrier wave of infrared light. A fascinating quantum world unfolds on the sub-optical-cycle scale, including Bloch oscillations, high-harmonic generation, and quasiparticle collisions\textsuperscript{1,2}. By combining this approach with ultramicroscopy we take the first femtosecond snapshot image of a molecular orbital and the first femtosecond single-molecule movie\textsuperscript{3}.

\textsuperscript{1} M. Hohenleutner et al., Nature \textbf{523}, 572 (2015)
\textsuperscript{2} F. Langer et al., Nature \textbf{533}, 225 (2016)
\textsuperscript{3} T. L. Cocker et al., Nature \textbf{539}, 263 (2016)