Abstract Submitted
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Intense light-matter interaction: How electron spin can influence strong-field ionization[1] SCOTT SAYRES, Arizona State University, ERIK HOSLER, STEPHEN LEONE, UC Berkeley — Advancements in laser technology continually push the interaction of light and matter to new limits, reaching unexplored frontiers where new science is emerging. Although light cannot directly interact with electron spin, I will present our recent experiments demonstrating that spin can play a profound role on ionization driven by strong-field laser pulses. Tabletop extreme ultraviolet (XUV) transient absorption spectroscopy is used to measure the angular distributions of singly and doubly tunnel-ionized xenon atomic states via 4d core to 5p valence shell transitions between 55 and 60 eV. These orbital alignment measurements are combined with theory to reveal new details about electron correlation (electron-electron interaction) during atomic strong-field double ionization that are fundamentally important for understanding light-matter interaction. [S. G. Sayres, E. R. Hosler, and S. R. Leone, J. Phys. Chem. A 118, 8614 (2014).]

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