

Abstract Submitted
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Commission of a new 2-color laser-synchrotron COLTRIMS experiment¹ A. GATTON, K. LARSEN, E. CHAMPENOIS, N. SHIVARAM, S. BAKHTI, W. ISKANDER, LBNL, T. SIEVERT, KSU, D. REEDY, UN-Reno, M. WELLER, U-Frankfurt, J.B. WILLIAMS, UN-Reno, A. LANDERS, Auburn, TH. WEBER, LBNL — We present the technical scheme of a new 2-color laser + synchrotron Cold Target Recoil Ion Momentum Spectrometer (COLTRIMS) experiment in which we overlap a pulsed IR laser ($1MHz$, $1030nm$, $12ps$, $5 * 10^{11}W/cm^2$) with XUV light from beamline 10.0.1 ($3MHz$, $18.56eV$, $80ps$, $50meV$ resolution) at the Advanced Light Source (ALS) at Lawrence Berkeley National Lab. We discuss the experimental methods for overlapping in 3D the co-linear ALS beam ($80um \times 100um$) with the laser beam focus ($50um \times 50um$) inside the gas jet target with a horizontal length and depth of $1mm$, as well as the timing scheme for achieving sub nanosecond stable synchrolock of the two pulse trains such that they are overlapped in time at the gas jet target every third ALS pulse. We present a definitive 2 color signal observed in Helium excited by $23.74eV$ photons from the ALS to the $1s4p$ 1P state, and then ionized by the laser. We intend to use this scheme to study dissociation dynamics of excited molecules in the presence of a strong laser field.

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