

Abstract Submitted  
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**Molecular rotational movies captured with KeV ultrafast electron diffraction**<sup>1</sup> YANWEI XIONG, KYLE WILKIN, MARTIN CENTURION, University of Nebraska Lincoln — Ultrafast electron diffraction (UED) measurements of isolated molecules have been a powerful tool to study structural dynamics during molecular reactions induced by an ultrafast laser pulse. The molecular wave packet motion can be retrieved with sub-Angstrom resolution from the two-dimensional electron diffraction patterns by the Fourier transform, followed by the Abel inversion. We use a 90-keV high-repetition rate table-top UED setup to capture a time-series of diffraction patterns from nitrogen molecules impulsively aligned by a femtosecond laser pulse. Based on the experimental data, we have retrieved an essentially continuous real-space movie of the rotational motion with high resolution and captured the initial alignment and multiple revivals.

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YANWEI XIONG  
University of Nebraska Lincoln

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