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Using CT algorithm to reconstruct electron beams transverse phase space in HUST-UED

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Accurate beam emittance and transverse phase space measurement are crucial for obtaining high-quality sample information in Ultrafast Electron Diffraction (UED). Traditional methods rely on general initial assumptions about the electron beam's phase space and lack specific distributions. The transverse phase space reconstruction technique based on the Computed Tomography (CT) algorithm eliminates the need for prior assumptions, resulting in more precise measurements. In this paper, we utilize an Algebraic Reconstruction Technique (ART) algorithm for HUST-UED, enabling the reconstruction of the beam transverse phase space distribution at the sample location and further facilitating system optimization.

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