

Abstract Submitted
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Electron Coherence Length Measurement Using Nanogratings

BEN MCMORRAN, ALEX CRONIN, University of Arizona — We have measured the transverse coherence length of an electron beam using an electron interferometer constructed of two nanostructure gratings and an imaging detector¹. When one of the gratings is twisted about the optical axis the visibility of the Lau fringes decreases. This dependence is predicted by a theory that assumes a semi-coherent converging beam incident on two gratings. We present this theory along with data to show that the twist dependence of the fringe visibility is primarily sensitive to the transverse coherence length at the detector plane, in a direction parallel to the grating bars. ¹A. Cronin and B. McMorran, *Phys. Rev. A* **74**,061602(R) (2006)

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