

Abstract Submitted
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Fast, GaAs, Spin-Polarized Electron Source¹ EVAN BRUNKOW, ERIC JONES, HERMAN BATELAAN, TIMOTHY GAY, University of Nebraska-Lincoln — Fast, pulsed sources of laser photo-emitted electrons from metals such as tungsten have been shown to have durations that can be comparable to the length of the laser pulse [1, 2]. Separately, continuous spin-polarized sources of electrons based on photoemission from GaAs have been developed [3]. We have now shown that we can produce fast-pulsed, spin-polarized electrons. Our initial experiments showed that when two temporally delayed pulses are incident on GaAs tips, fewer electrons are emitted as compared to the sum of the electrons emitted with each pulse individually [4]. Using a 20 keV Mott polarimeter of novel design [5], we have shown that this pulsed source is $\sim 13\%$ spin polarized. However, we have evidence that the electron polarization may be dependent upon the shape of the emitting area and have started to investigate if the polarization can be increased. [1] B. Barwick *et al.*, *New J. Phys* **9**, 142 (2007). [2] P. Hommelhoff *et al.*, *Phys. Rev. Lett.* **96**, 077401 (2006). [3] D.T. Pierce and F. Meier, *Phys. Rev. B* **13**, 5484 (1976). [4] E. Brunkow *et al.*, *Bull. Am. Phys. Soc.* **60** (2015). [5] N.B. Clayburn *et al.*, *Rev. Sci. Instrum.* **87**, 053302 (2016).

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