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**High Current Electron Beam Emission Driven by a Nonlinear Transmission Line** DAVID FRENCH, BRAD HOFF, SUSAN HEIDGER, Air Force Research Laboratory — Simulations of an electron beam diode driven by a modulated voltage pulse provided by a nonlinear transmission line (NLTL) will be presented. Based on a previous low voltage experiment [1] the new design operates at 250 kV and provides a multi-kA modulated electron beam based on the modulated drive signal from a ferrite based NLTL. The NLTL driver has been demonstrated experimentally and is tunable from 900-1400 MHz with pulse durations from 4-17 ns. Particle-In-Cell simulations in ICEPIC show the modulated voltage signal results in a modulated electron beam current emitted directly from the cathode in a few cm annular beam. Expected results and the experimental design for the electron beam diode and diagnostics will also be presented.

[1] D. M. French, B. W. Hoff, W. Tang, S. Heidger, J. Allen-Flowers, D. Shiffler, "Nonlinear Transmission Line Based Electron Beam Driver," Rev. Sci. Instrum. 83, 123302 (2012).

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