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Modification of a Scanning Tunneling Microscope for Measurement of Ballistic Electron Emission Microscopy[1] SATCHER HSIEH, Washington Univ, JEONGMIN HONG, JEFFREY BOKOR, University of California, Berkeley — Magnetic memory and logic devices show great promise for integration with, and even replacement of, conventional complementary metal-oxide-semiconductor (CMOS) architectures. In order to characterize materials and deposition techniques for these devices, ballistic electron emission microscopy (BEEM) is used. BEEM is a spatially resolved metrological tool most commonly used for subsurface interface structures at the nanometer scale. We modify a scanning tunneling microscope (STM) to perform BEEM measurement via design and fabrication of a novel sample stage. Furthermore, we design and fabricate an external magnetic field source that encapsulates the sample stage, setting the foundation for future measurement of ballistic electron magnetic microscopy (BEMM). Instrumentation of the device and characterization of a sample with an ohmic interface, Ni-Si, are implemented and discussed.

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