Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Utilizing Ballistic Electron Emission Microscopy to Study Sidewall Scattering of Electrons WESTLY NOLTING, CHRIS DURCAN, ROBERT BALSANO, College of Nanoscale Science and Engineering, University at Albany, VINCENT LABELLA, Colleges of Nanoscale Science and Engineering, SUNY Polytechnic Institute — Sidewall scattering of electrons in aggressively scaled integrated devices dramatically increases the resistance since the dimensions are approaching the mean free path of electrons in a metal ~ 40 nm. Ballistic Electron Emission Microscopy (BEEM) can be utilized to study hot electron scattering in metal films. In this presentation BEEM is performed on a lithographically patterned interface between a metal and a semiconductor to determine its potential at measure sidewall scattering. This is accomplished by acquiring spectra on a regularly spaced grid and then fitting the spectra to determine both the Schottky barrier height and the slope of the spectra. The position dependent maps of these two parameters are then related to the scattering at the interface due to the underlying pattern.

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Date submitted: 13 Nov 2014 Electronic form version 1.4