## Abstract Submitted for the OSF10 Meeting of The American Physical Society

GaMnAs Ferromagnetic Single Electron Transistor Nano-devices BHIM PAUDEL, LEONIDAS OCOLA, CALFORD OTIENO, NOAH OPONDO, GRANT RILEY, XINYU LIU, JACEK FURDYNA, KHALID EID, Miami University, CNM FACILITY, ARGONNE NATIONAL LABORATORY COLLABORATION, PHYSICS DEPARTMENT, NOTRE DAME UNIVERSITY COLLABORATION — Mn-doped GaAs (or GaMnAs) offers opportunities to demonstrate both new device concepts with added functionality and new phenomena in condensed matter physics, since it is both a ferromagnet and a semiconductor. We will present our recent results on fabricating and characterizing GaMnAs-based single electron transistor (SET) devices. The resistance of these deep-nanoscale devices can be manipulated either by varying the applied voltage or via an external magnetic field. The nano-devices were prepared using electron-beam lithography and wet chemical etching. The magnetoresistance of the devices was as high as 40% at 4.2 K and the behavior was strikingly different from previous results reported in literature.

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