## Abstract Submitted for the MAR13 Meeting of The American Physical Society

Magnetic Origin of Electronic Nematicity in NaFeAs (Part I) CARLOS J. ARGUELLO, ETHAN ROSENTHAL, ERICK ANDRADE, Department of Physics, Columbia University, RAFAEL FERNANDES, School of Astronomy and Physics, University of Minnesota, ANDREW MILLIS, Department of Physics, Columbia University, CHANGQING JIN, Institute of Physics, Chinese Academy of Sciences, ABHAY PASUPATHY, Department of Physics, Columbia University — Several experiments have shown that the parent states of the iron pnictides display electronic nematicity at high temperature, where the electronic states spontaneously break the rotational symmetry of the crystal lattice. A common feature displayed by many pnictide systems is a tetragonal to orthorhombic distortion on cooling down the system below  $T_S$  and a magnetically ordered phase below  $T_{SDW}$ . In particular, NaFeAs has a structural to orthorhombic transition  $(T_S=54K)$  and a SDW transition  $(T_{SDW}=39K)$ . This wide temperature difference between transitions makes it an excellent testing ground for the characterization of the electronic states in each one of these regimes. The electronic states of this material can be directly visualized as a function of temperature using atomic-resolution scanning tunneling microscopy/spectroscopy. Real-space images of the electronic states show domains on the micron scale, with a strong unidirectional character persisting to temperatures well above  $T_S$ . These unidimensional features are found to be localized around defects in the system. We will discuss the details of the energy and temperature dependence of these features in both real space and Fourier space, as well as draw differences with the structurally similar LiFeAs.

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