Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Polarized neutron scattering as a probe of spin nematicity in the iron-based superconductor BaFe$_{2-x}$Ni$_x$As$_2$\textsuperscript{1} HUIQIAN LUO, WEN-LIANG ZHANG, MENG WANG\textsuperscript{2}, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, LOUIS-PIERRE REGNAULT, Institut Laue-Langevin, Grenoble, France, CHENGLIN ZHANG, PENGCHENG DAI, Department of Physics and Astronomy, Rice University, Houston — We use polarized neutron scattering to demonstrate that in-plane spin excitations in electron doped superconductor BaFe$_{1.904}$Ni$_{0.096}$As$_2$\textsuperscript{[1]} change from isotropic to anisotropic in the tetragonal phase well above the antiferromagnetic ordering and tetragonal-to-orthorhombic lattice distortion temperatures without an uniaxial pressure\textsuperscript{[2]}. The anisotropic low-energy spin excitations at the same momentum transfer share similar features with the spin nematic phase probed in the detwinned samples with uniaxial pressure, and consistent with in-plane resistivity anisotropy\textsuperscript{[3]}. These results indicate that the polarized neutron scattering is a good probe of the spin nematicity in the tetragonal phase of iron pnictides\textsuperscript{[4]}. References


\textsuperscript{1}Supported by MOST (973 programs), NSFC, CAS and CAEP.
\textsuperscript{2}Present address: Department of Physics, University of California, Berkeley

Huiqian Luo
Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences

Date submitted: 03 Jan 2015

Electronic form version 1.4