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**Polarized neutron scattering as a probe of spin nematicity in the iron-based superconductor  $\text{BaFe}_{2-x}\text{Ni}_x\text{As}_2$** <sup>1</sup> HUIQIAN LUO, WENLIANG ZHANG, MENG WANG<sup>2</sup>, 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  $\text{BaFe}_{1.904}\text{Ni}_{0.096}\text{As}_2$  [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 [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 [3]. These results indicate that the polarized neutron scattering is a good probe of the spin nematicity in the tetragonal phase of iron pnictides [4]. References [1] Yanchao Chen, et.al., Supercond. Sci. Technol. 24, 065004 (2011) [2] Huiqian Luo, et.al., Phys. Rev. Lett. 111, 107006 (2013). [3] Xingye Lu, et.al., Science 345, 657 (2014) [4] Huiqian Luo, et.al., unpublished manuscript (2015).

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