Abstract Submitted
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Phonon Softening in $PrFeAsO_{1-y}$ (y∼0.2) by Inelastic X-Ray Scattering[1] ALFRED Q.R. BARON, SPring-8/RIKEN and JASRI, TATSUO FUKUDA, SPring-8/RIKEN and JAEA, SHIN-ICHI SHAMOTO, JAEA, HIROSHI UCHIYAMA, SPring-8/JASRI, JUN-ICHIRO MIZUKI, JAEA, HIROKI NAKAMURA, MASAHIKO MACHIDA, CREST, JST, JAEA, MOTOYUKI ISHIKADO, JAEA, MASATOSHI ARAI, J-PARC JAEA, HIJIRI KITO, HIROSHI EISAKI, NeRI, AIST — We present phonon dispersion measurements from single crystals of $PrFeAsO_{1-y}$ with T_c (onset) of 42 to 45 K made using inelastic x-ray scattering with 1.5 meV resolution at BL35XU of SPring-8. In agreement with our previous results on powders and crystals [1] we see pronounced softening of the in-plane Fe-As modes compared to phonon calculations using pseudopotential methods in the tetragonal (non-magnetic) structure. C-axis modes are somewhat harder. No strong changes in phonon spectra across T_c were observed at the momentum transfers investigated. We also compare our results against calculations of phonons in the magnetic parent material. [1] Fukuda*, et al*, J. Phys. Soc. Japan, **77** (2008), 103715.

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Alfred Baron
SPring-8/RIKEN and JASRI

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