Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Muon spin relaxation and x-ray/neutron total scattering studies of layered superconductor BaTi2(As,Sb)2O BENJAMIN FRANDSEN, Columbia Univ, YASUMASA NOZAKI, Kyoto University, EMIL BOZIN, Brookhaven National Laboratory, HIROSHI KAGEYAMA, Kyoto University, SIMON BILLINGE, Columbia University, Brookhaven National Laboratory, YASUTOMO UEMURA, Columbia University — Layered oxy-pnictide systems such as ATi2Pn2O (A = Na2, Ba, (SrF)2, (SmO)2; Pn = As, Sb, Bi) possess interesting electronic and magnetic properties, including spin/charge density wave (S/CDW) ordering and superconductivity. In addition, they share similarities with the cuprate and iron-pnictide high-Tc compounds, such as planar sheets metal-oxygen sheets, electron/hole-symmetric electron configurations (3d1 and 3d9), and close proximity of density wave and superconducting orders, thus making them intriguing systems to study to gain insight into unconventional superconductivity. BaTi2(As,Sb)2O is a prototypical layered oxy-pnictide system known to have either CDW or SDW ordering for all compositions and superconductivity below 1 K for the Sb endmember. However, it has remained unclear whether the order is CDW or SDW. To investigate this, we have performed muon spin relaxation/rotation and x-ray/neutron total scattering measurements on several specimens. Zero-field muon spin relaxation measurements show no significant increase in relaxation rate at the density wave ordering temperature, indicating that the system undergoes CDW rather than SDW order. Pair distribution function analysis of the total scattering data has yielded insight into the structural details of the CDW transition.

Benjamin Frandsen
Columbia Univ

Date submitted: 15 Nov 2013 Electronic form version 1.4