Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Temperature dependence of alpha-epsilon phase transition in iron under high pressure ESEN ALP, WENLI BI, JIYONG ZHAO, MICHAEL HU, THOMAS TOELLNER, Argonne National Laboratory, Advanced Photon Source, STANISLAV SINOGEIKIN, Carnegie Institute of Science, HP-CAT TEAM, APS 3-ID TEAM — Temperature dependence of magnetic and structural phase transition in alpha-iron (bcc) under high pressure to epsilon iron (hcp) has been studied using nuclear resonant scattering of synchrotron radiation between 10-620 K. A detailed and precise phase boundary to determine the slope of dT/dP is determined. The experiments were conducted at the Advanced Photon Source during the hybrid fill mode, which provides unprecedented accuracy in determining the relative phase around the transition region. We will discuss possible mechanisms in light of extensive prior literature on the dependence of alpha-to-epsilon phase transition in iron under high pressure.

Esen Alp
Argonne National Laboratory

Date submitted: 12 Nov 2016 Electronic form version 1.4