Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Shell Evolution in the Neutron-Rich Cu and Zn Isotopes JOE BELARGE, DANIEL BAZIN, ALEXANDRA GADE, YASSID AYYAD, PETER BENDER, ROBERT ELDER, BRANDON ELMAN, HIRO IWASAKI, NOBUYUKI KOBAYASHI, CHARLES LOELIUS, BRENDEN LONGFELLOW, ERIC LUNDERBERG, PIERRE MORFOUACE, CHRIS SULLIVAN, DIRK WEISSHAAR, KENNETH WHITMORE, National Superconducting Cyclotron Laboratory — Recent shell model calculations predict a gradual reduction of the Z=28 shell gap in Ni isotopes as the $\nu 1g_{9/2}$ orbital is filled from ^{68}Ni to ^{78}Ni [Otsuka et al. PRL 95,232502]. These predictions can be experimentally tested by measuring the spectroscopic strength of a given orbital in an isotopic chain. The neutron-rich Cu isotopes, with one proton outside of a filled $\pi 1f_{7/2}$ orbital, are some of the best candidates to exhibit the effects of the underlying structure evolution in this region. The high luminosity provided by fast beam, thick target experiments performed at the NSCL, coupled with the high resolution, high efficiency gamma-ray array GRETINA, provide a unique opportunity to study the neutron-rich Cu isotopes. The current experiment aims to measure the strength of 2p-1h excitations in $^{69-77}$Cu, populated through one proton knockout from $^{70-78}$Zn beams on a Be target, thereby probing the effective single particle energy and spectroscopic strength of the $\pi 1f_{7/2}$ orbital. Results from the ongoing analysis will be presented.

Joe Belarge
National Superconducting Cyclotron Laboratory

Date submitted: 30 Jun 2016 Electronic form version 1.4