Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Invariant mass spectroscopy of ^{17}C via one-neutron knockout reaction from ^{18}C SUNJI KIM, Seoul National University, SAMURAI COLLABORATION — The nuclei away from the β-stability line are expected to have exotic nuclear structures. For example, the ground states of neutron-rich carbon isotopes, ^{15}C, ^{17}C, and ^{19}C, have been predicted to be $5/2^+$ states in the naive shell model. However, they were identified as $1/2^+$, $3/2^+$, and $1/2^+$, respectively, due to the halo structure and/or nuclear deformation. To understand the properties of the valence orbit relative to the inner orbit in those neutron-rich carbon isotopes, the study of the negative parity states is decisive. The present study focuses on the low-lying negative parity states in ^{17}C above the neutron decay threshold. The experiment was performed for the C(^{18}C,^{17}C*) one-neutron knockout reaction channel at 250 MeV/nucleon using the SAMURAI spectrometer at RIKEN-RIBF, during the first physics runs of the apparatus. The nucleon knockout reaction utilizing the secondary beams in inverse kinematics has become recognized as a sensitive tool for spectroscopy of the nuclei far from the β-stability line. In the presentation, details of the measurement and analysis will be reported together with new results on the low-lying negative parity states in ^{17}C.

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Date submitted: 01 Jul 2014 Electronic form version 1.4