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Study of unbound states of 33Ne via one proton knockout reaction (Video Conference)

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In recent years, shell evolution of Ne isotopes from N=20 to N=32 is emerging topic of interest [1]. Especially, the ground state of 33Ne known as an unbound state has not yet been measured [2]. The spectroscopic research of the 33Ne can help to establish the mass of the ground state as well as to study the shell evolution by comparing with the theoretical calculation.
The experiment was carried out at the RIBF facility in RIKEN. The 34Na secondary beam with 268 MeV/nucleon was provided by BigRIPS [3] and directed towards the secondary carbon target before SAMURAI magnet. After the one proton knockout reaction, 33Ne which decays into 32Ne and neutron immediately was produced. The invariant mass spectrum was reconstructed by measurement data of fragments from several detectors with SAMURAI spectrometer. In this presentation, details of analysis and very preliminary results of the invariant mass spectrum of 32Ne + n will be reported.

References
[1] P. Doornenbal et al., Phys. Rev. Lett. 103, 032501 (2009).
[2] T. Baumann, A. Spyrou, and M. Thoennessen, Rep. Prog. Phys. 75, 036301 (2012).
[3] T. Kubo, Nucl. Instr. Meth. B 204, 97 (2003).

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