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## Study of two missing states of $^{19}\text{Ne}$ affecting the $^{18}\text{F}(p, \alpha)^{15}\text{O}$ reaction rate in classical novae

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Knowledge of the  $^{19}\text{Ne}$  resonance information near the proton threshold ( $E_x=6.410$  MeV) is important for studying the  $^{18}\text{F}(p, \alpha)^{15}\text{O}$  nuclear reaction rate in a classical nova [1-4]. Several states in the vicinity of the proton threshold still have not been observed in  $^{19}\text{Ne}$  but were predicted by assuming isospin symmetry from its mirror state in  $^{19}\text{F}$  [5,6]. The  $\alpha$ -elastic scattering experiment in a Thick Target Inverse Kinematics method (TTIK) was performed at RIKEN using the CNS RI Beam separator (CRIB) with a  $^{15}\text{O}$  radioactive beam for investigating the  $^{19}\text{Ne}$  level structure [7,8]. Two missing states were identified near the proton threshold, and one of the missing states affects the  $^{18}\text{F}(p, \alpha)^{15}\text{O}$  reaction rate. Additionally, the candidates of rotational bands for the alpha cluster structure were measured. Experimental details and results will be discussed in the presentation.

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