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# Search for alpha-condensed states in $^{20}$Ne and $^{24}$Mg

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Alpha clustering is a crucial concept to understand nuclear structures. Alpha particles, which are tightly bound with no excited states up to Ex ~ 20 MeV, often behave as well established subunits in nuclei, forming what are known as alpha cluster states.

Of particular interest are alpha condensed states where all alpha clusters are condensed into the lowest s orbit. Due to this unique property, these states exhibit very sharp momentum distribution around zero. As a result, their density distributions spatially expand, becoming as dilute as about 1/5 compared to normal nuclei.

In our research, we searched for the 5alpha condensed state by measuring alpha-particle decays from excited states in $^{20}$Ne populated by inelastic alpha scattering at zero degrees, and found its candidate states. Additionally, we recently reported candidates for the 6-alpha condensed state and its excited states with their spin and parity of 2+ and 4+ observed in the $^{12}$C + $^{12}$C resonance scattering.

In the present talk, we will report our experimental findings in the search for the alpha condensed states in $^{20}$Ne and $^{24}$Mg.

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