

Observing the four-neutron system in $^8\text{He}(p,p\alpha)$ reactions

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The long-standing question regarding the existence of a bound four-neutron system, a so-called tetra-neutron, was addressed in an experiment at SAMURAI using the MINOS LH2 target. A ^8He beam was used to perform a $(p,p\alpha)$ reaction in inverse kinematics at large center-of-mass angles, allowing for the prompt removal of the α and thus minimizing its influence on the $4n$ system. Results of this experiment will be presented, as well as plans for an upcoming experiment briefly explained.

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