

Direct reactions and spectroscopy with hydrogen targets: past 10 years at the RIBF and future prospects

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Study of the heaviest fluorine isotopes

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The nuclear shell model is one of the remarkable accomplishments in nuclear physics. Intriguingly, nuclear structure changes significantly in highly asymmetric nuclei. A particularly notable region in the chart of nuclei is the island of inversion around the neutron-rich neon to magnesium isotopes. I will discuss the structure of the neutron-rich fluorine isotopes, specifically ^{28}F , ^{29}F , and ^{30}F , located at the southern shore of the island of inversion. The detailed spectroscopy reveals shell evolution and loss of magicity at neutron number $N=20$ in these isotopes as well. We performed the high-resolution invariant-mass spectroscopy of the neutron-unbound nuclei ^{28}F , ^{30}F , and of two-neutron decays in ^{29}F for the first time at the SAMURAI setup.

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