

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

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Overview of the SEASTAR Project

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In order to take full advantage of the RIBF's unprecedented secondary beam energies, the "Shell Evolution and Search for Two-plus energies At RIBF" (SEASTAR) project was initiated in 2013. The project aims to systematically study shell evolution in neutron-rich nuclei via in-beam gamma-ray spectroscopy and covers a wide range of nuclei from the neutron sub-shell closures at $N=32,34$ in Ca to the possible $N=70$ harmonic oscillator shell closure.

SEASTAR combined the NaI(Tl) based scintillator array DALI2+ with the liquid hydrogen and vertex tracker array MINOS. Three experimental campaigns were carried out in 2014, 2015, and 2017, the former two at ZeroDegree, the latter at

SAMURAI. In my presentation I will review the origins of SEASTAR, point out a few highlights, and venture a brief outlook towards possible future campaigns combining in-beam gamma-ray spectroscopy with quasi-free scattering.

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