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## **In-beam gamma spectroscopy with fast RI beams at RIKEN**

The presentation will address nuclear structure and shell evolution at extreme isospin values, studied via in-beam gamma-ray spectroscopy at intermediate energies following knockout reactions on a thick liquid hydrogen target. Besides an introduction of the setup, key results will be presented that demonstrate the close cooperation between experiment and nuclear structure and reaction theory.

Particular emphasis will be laid on spectroscopy of the neutron-rich Ca isotopes  $^{54,56}\text{Ca}$ , in which the significance of  $3N$  forces can be studied, and the assumed doubly magic nucleus  $^{78}\text{Ni}$ . The excitation spectrum of the latter provides first hints of the breakdown of magic neutron number  $N=50$  and magic proton number  $Z=28$  towards more exotic isotones and isotopes.

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