

## Direct mass measurement of proton-rich Fe isotopes

The two-proton radioactivity (2p decay) is an exotic decay mode that was predicted theoretically in the 1960s and first discovered experimentally in 2002. Two protons are simultaneously emitted from the ground state of some neutron-deficient nuclei such as  $^{19}\text{Mg}$ ,  $^{45}\text{Fe}$ ,  $^{48}\text{Ni}$ , and  $^{54}\text{Zn}$ .

Because the two-proton emitters are very undatable, it is difficult to study their energy structure, and the mechanism of 2p decay is not fully established.

In this research, we performed the direct mass measurement of  $^{45}\text{Fe}$  and the nucleus in its vicinity to reveal the energy structure and proton separation energy using the Tof-Brho method in the OEDO-SHARAQ beamline. We are aiming to evaluate the probability that two protons tunnel the potential barrier. The present status of the data analysis will be reported.

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