

# Search for Two-Proton Emitters at FRS-GSI

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An exciting but still unobserved phenomenon at the proton drip line is the two-proton ground-state (2p) radioactivity, predicted by Goldanskii about 40 years ago [1]. Modern shell-model calculations [2,3] identified  $^{45}\text{Fe}$  and  $^{48}\text{Ni}$  as the best candidates for observation of this new type of radioactivity. In the experiment performed on the SIS/FRS facility at the GSI Darmstadt, the fragmentation reaction of the  $^{58}\text{Ni}$  beam at 600 MeV/nucleon on a beryllium target was used to produce proton-rich isotopes in the titanium-to-nickel region [4]. Three events of  $^{45}\text{Fe}$  and five events of  $^{49}\text{Ni}$  were identified for the first time. The upgrade of the GSI accelerator complex, currently going on, will result in the substantial increase of beam intensity and thus allow for the next step : the search for  $^{48}\text{Ni}$  and approach to study decay modes in vicinity of this extremely exotic and doubly-magic nucleus. The experimental challenges and perspectives of a planned next experiment at the GSI will be presented and discussed.

## References

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