

## Experimental investigation of the nuclear structure in the neutron-rich $^{180}\text{Hf}$

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### Abstract

The structure of  $^{180}\text{Hf}$  ( $Z = 72$ ) is of particular interest, as the nucleus features a rotational ground state band, but also several other collective bands, K–isomers, and non–band members [1], which are generally poorly investigated. This work features preliminary results from a recent experimental campaign at IFIN–HH, Romania, aimed at measuring lifetimes of excited states in the neutron–rich  $^{180}\text{Hf}$ , by means of the RDDS technique. The  $^{181}\text{Ta}(^{11}\text{B}, ^{12}\text{C})^{180}\text{Hf}$  proton pick–up reaction was used to populate excited states in the  $^{180}\text{Hf}$  nucleus. The  $\gamma$  transitions depopulating these levels were detected using the ROSPHERE [2] array, in its 25 HPGe configuration. The array was coupled to the SORCERER [3] particle detector and a plunger device enabling the study of p– $\gamma$  and p– $\gamma$ – $\gamma$  coinciding events. Six different plunger foil distances were chosen, allowing for the construction of the decay curves of the observed  $\gamma$  transitions, from which the lifetimes of the levels of interest can subsequently be deduced.

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## References

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