

## Mass measurement of neutron-rich $^{122}\text{Rh}$ , $^{123,124}\text{Pd}$ and $^{125}\text{Ag}$ nuclides with Rare RI Ring at RIBF in RIKEN

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Recent sensitivity studies for the r-process have indicated that the masses of the neutron-rich Pd, Ag, Cd, In, Sn and Sb nuclei have a significant influence on the final elemental abundance pattern for the A=130 r-process abundance peak [1]. Predicted deformation before the N=82 shell closure may also play a role in the r-process abundance of elements with A<130 [2]. Masses of 15 nuclides relevant for the second r-process peak at A=130 will be measured for the first time at the rare-RI ring (R3) at Radioactive Ion Beam Factory (RIBF) in RIKEN. The R3, a cyclotron-like storage ring mass spectrometer, was recently commissioned and is specifically dedicated for exotic nuclei far from stability. A mass resolution of about  $10^{-6}$  is expected to be achieved [3].

In autumn 2018, direct mass measurements with R3 were carried out for the fission fragments of  $^{238}\text{U}$  at RIBF. Nuclei of interest were produced by the in-flight fission of  $^{238}\text{U}$  beam at 345 MeV/u impinged on a Be target. The fragments were separated with BigRIPS, transported through the OEDO and SHARAQ beamline, injected and stored in the R3 using the self-triggered individual injection method. The masses of  $^{122}\text{Rh}$ ,  $^{123,124}\text{Pd}$  and  $^{125}\text{Ag}$  were measured. The details of the data analysis and the preliminary results will be reported in this contribution.

[1] M. Mumpower, et al., Journal of Physics G: Nuclear and Particle Physics, 42(3), 2015

[2] K.L. Kratz, et al., The Astrophysical Journal 792, no. 1, 2014

[3] A. Ozawa, et al., Progress of Theoretical and Experimental Physics 2012, no. 1, 2012