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β-Decay Studies of Mass 104 Isotopes Using MTAS[1] ALEXANDER LAMINACK, BERTIS RASCO, KRZYSZTOF RYKACZEWSKI, SHUAI PENG, Oak Ridge National Lab, MTAS COLLABORATION — Approximately 8% of the heat produced in a nuclear reactor comes from decay chains of fission products. γ radiation emitted in these decays is commonly referred to as decay heat. In order to model decay heat, accurate knowledge of β-feeding intensities and following gamma radiation is needed. This includes ground-state feeding, excited-state feeding, as well as β-delayed neutron emission. Previous high-precision measurements suffer from low detection efficiency and are thus susceptible to the so called pandemonium effect resulting in inaccurate decay patterns. The Modular Total Absorption Spectrometer (MTAS) achieves a high detection efficiency for γ rays by utilizing one ton of NaI scintillators. In addition to being sensitive to γ rays associated with the pandemonium effect, total absorption spectroscopy with MTAS allows for the measurement of ground-state to ground-state feeding intensities and β-delayed neutron emission branching ratios. β-feeding intensities of ^{104}Nb, ^{104}Mo, and ^{104}Tc were measured with MTAS at Argonne National Laboratory's CARIBU facility. The results of these measurements as well as a comparison to previous measurements will be presented here.

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