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β-decay studies of $A = 107$ fission products with the Modular Total Absorption Spectrometer (MTAS) PENG SHUAI, University of Tennessee, MTAS COLLABORATION — Determination of the feeding intensities in β-decay of fission products is of high importance to address the reactor antineutrino anomaly and model the reactor decay heat. β-decay measurements with high-resolution but low-efficiency detectors may suffer from the Pandemonium effect, which leads to the misinterpretation of the feeding to high excited levels as the feeding to low-lying levels. Modular Total Absorption Spectrometer (MTAS), which has almost 99% gamma detection efficiency, is an ideal spectrometer to determine the true β feeding intensities free from Pandemonium effect. MTAS has been utilized to measure the beta decay pattern of several fission products that are high-priority contributors to reactor decay heat and antineutrino spectrum. In this talk, we will present some preliminary results of $A = 107$ decays measured at CARIBU (ANL) in March, 2020. The β-branching of ^{107}Mo, which is absent in current nuclear dataset, is determined experimentally. We found the γ energy of ^{107}Tc deposit in MTAS is increasing to about $\sim$ 2.2 MeV, while the number calculated using current nuclear data is only $\sim$ 0.8 MeV. This suggests a large shift of the antineutrino spectrum of ^{107}Tc towards lower energy.

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