β-decay intensities of ^{107}Mo determined by the Modular Total Absorption Spectrometer (MTAS)

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Pandemonium effect is a potential systematic bias of β feeding intensities in the β-decay measurements using high-resolution but low-efficiency detectors. This leads to misinterpretation of the feeding intensities to high excited levels in β-decay. 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 [1].

We have performed several MTAS experiments of fission products with mass from 99 - 107 at CARIBU (ANL). In this talk, I will present some preliminary data analysis result of ^{107}Mo, which has 1.4% cumulative fission yield of ^{235}U but lack of experimental data in current ENSDF dataset. A new analysis method that can extract the intensities of first generation γs in β-decay is developed. The implementation of this method does not require any information of existing level scheme from HPGe experiments. The average γ and β decay heat of ^{107}Mo are calculated for the first time. The new result of ^{107}Mo will benefit the fundamental research of reactor anti-neutrino flux and decay heat calculation.

[1] M. Karny *et al.*, Nucl. Instr. Meth. A **836**, (2016) 83.