Abstract Submitted
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Study of $^{180}Ta^{m}$ Lifetime by using HPGe Detector at Kamioka Underground Observatory W.M. CHAN, T. KISHIMOTO, K. SUZUKI, Graduate School of Science, Osaka University, K. MATSUOKA, S. UMEHARA, Research Center for Nuclear Physics, Osaka University, S. YOSHIDA, Graduate School of Science, Osaka University, M. NOMACHI, T. IIDA, K. NAKAJIMA, Research Center for Nuclear Physics, Osaka University, N. NAKATANI, Osaka Sangyo University, H. KAKUBATA, W. WANG, V.T.T. TRANG, T. OHATA, K. TETSUNO, Graduate School of Science, Osaka University, D. TANAKA, T. MAEDA, Research Center for Nuclear Physics, Osaka University, CANDLES COLLABORATION — For all nuclear isotopes that exist on the Earth, $^{180}Ta^{m}$ has known as the only isotope that naturally occurring in metastable state with remarkable properties of long-lived isomeric state ($T_{1/2} > 1.2 \times 10^{15}$ y) and short-lived ground state ($T_{1/2} = 8.1$ h). Many researchers have great concern about this isotope because of its interesting nuclear properties and puzzling nucleosynthesis mechanics. The half-life of $^{180}Ta^{m}$ is yet to be confirmed up until now. Since July 2013, we have developed a new ultra-low background gamma spectroscopy with HPGe detector at the Kamioka Underground Observatory (2700 m.w.e.) and started the observation of the decay of $^{180}Ta^{m}$. Compare with other worldwide researches, Kamioka stands a good chance to conclude or impose a longer limit on the half-life of $^{180}Ta^{m}$ in the order of 10^{17} years. With effort on background reduction such as shield design and pulse shape discrimination analysis, we have successfully improved the signal-to-noise ratio of the measurement. The result will be presented for the first time in this meeting.

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