



国立研究開発法人理化学研究所 仁科加速器研究センター
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RIKEN Nishina Center for Accelerator Based Science
The 221st RIBF Nuclear Physics Seminar

Large scale shell model calculations for double beta decay of ^{48}Ca

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Neutrinoless double beta decay provides a way to determine the effective mass of neutrinos. If the half life of neutrinoless double beta decay is measured, the effective mass of neutrino is determined using the value of nuclear matrix element (NME). In this talk a new NME value for neutrinoless double beta decay of ^{48}Ca based on large-scale shell model calculations is presented, and compared to the existing theoretical data. For the purpose of examining the reliability of our shell-model calculations, calculated nuclear matrix element for two-neutrino double beta decay is also presented, and compared to experimental data. Consequently a constraint for effective neutrino mass is suggested based on the latest NME value. The impact of sterile neutrino on the life-time of double beta decay will be also presented for the double beta decay of ^{48}Ca .

References:

- [1] Y. Iwata, N. Shimizu, T. Otsuka, J. Menendez, Y. Utsuno, M. Honma, and T. Abe, Phys. Rev. Lett. 116 (2016) 112502.
- [2] Y. Iwata, N. Shimizu, T. Otsuka, J. Menendez, Y. Utsuno, M. Honma, and T. Abe, JPS Conf.Proc. 6 (2015) 030057.

* The talk will be given in English language..

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