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Double beta decay of 48Ca in CANDLES III -development of the calibration system- YOSHIYUKI HIRANO, Graduate School of Science, Osaka University, TDAFUMI KISHIMOTO, IZUMI OGAWA, RYUTA HAZAMA, SEI YOSHIDA, SAORI UMEHARA, KAYOKO ICHIHARA, CANDLES COLLABORATION — We have been studying double beta decay of 48Ca. The observation of neutrino-less double beta decay is important since it establishes lepton number non-conservation and the Majorana nature of neutrinos. The detector system CANDLES were developed for the study of neutrino-less double beta decay. We are now constructing CANDLES III, which consists of 40 large PMTs and 60 undoped CaF2 crystals immersed in a liquid scintillator acts as an active veto. And the detector has to be in law background environment because double beta decay is quite rare event. The Q-value (4.27MeV) of 48Ca is the highest among the double beta nuclei. Therefore, the least background rate is expected because the Q-value is higher than the natural gamma ray energy. With regarding to the energy calibration, there are no commercially available sources with gamma ray energy around the Q-value. Consequently, we use sum energy (4.11MeV) of 1.36 MeV and 2.75 MeV emitted from 24Na, which is activated by neutron source. According to a simulation, it is applicable for CANDLES by making use of the 4 pi active shield. I will report CANDLES and it's calibration system.

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