Contribution ID: **143** Type: **Poster (Session A)**

Three-dimensional drift chambers of the DCBA experiment for neutrinoless double beta decay search

The DCBA (Drift Chamber Beta-ray Analyzer) experiment is in progress at KEK for investigating Majorana nature and the absolute mass scale of neutrinos through the phenomena of neutrinoless double beta decay ($0\nu\beta\beta$). DCBA detector consists of drift chambers, a solenoid magnet and cosmic-ray veto-counters. A momentum of beta ray is measured from its helical track in the chamber installed in a uniform magnetic field. Its kinetic energy is obtained from the momentum. One important item is the rejection capability for background events. DCBA is essentially insensitive to gamma rays, which cause serious backgrounds in calorimeter case. The particle identification capability of DCBA plays important roles for selecting beta rays from backgrounds such as electrons, positrons and alpha particles. Another important item is the energy resolution at the Q-value to distinguish $0\nu\beta\beta$ events from $2\nu\beta\beta$ (double beta decay with emitting two neutrinos). A prototype called DCBA-T2 has been constructed and operated. A decay source plate has been installed between two chambers. Chamber gas is the mixture of He and CO2 for reducing the effects of the multiple Coulomb scatterings and energy losses on beta rays. In order to study energy resolution, the energy spectra have been measured for internal conversion electrons from 207Bi, the point source of which is mounted on the center of source plate. The results of the energy resolution measurement will be presented together with future prospects.

Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):

http://heal1.phys.metro-u.ac.jp/user/ishikawat/VCI2010_info_Ishikawa.pdf

Author: ISHIKAWA, Takashi (Tokyo Metropolitan University)

Presenter: ISHIKAWA, Takashi (Tokyo Metropolitan University)