Contribution ID : **94** Type : **not specified**

New method of Kr-85 reduction in low-background detectors.

Wednesday, 7 October 2015 15:30 (15)

Krypton-85 is a technogenic beta-radioactive isotope which produces background in a low-energy region in dark matter and neutrino detectors: in noble gas detectors, especially in liquid Xenon detectors, in organic liquid scintillator detectors. We propose a new method of reduction of the 85Kr isotope in a detector medium based on adding to the detector medium a Krypton sample depleted of the 85Kr isotope and subsequent reduction of the Kr content down to the initial or even lower level with the use of existing methods of purification. This method works because the residual natural Kr is diluted in the depleted one and is removed together with it from Xe since both of them have the same thermodynamic properties. A test cell for measurement of the activity of the depleted Kr has been assembled and the radioactivity of the 25-year-old Krypton has been measured. The measured activity (56 ± 5 Bq/g) recalculated to the air the air activity due to 85Kr decays in the year 1990 (1.20 ± 0.10 Bq/m3) is close to the data on the air activity at that time.

Presentation type

Section talk (10+5 min)

Primary author(s) : Dr. AKIMOV, Dmitry (ITEP and MEPhI)

Co-author(s) : Mr. SIMAKOV, Grigory (ITEP)

Presenter(s) : Dr. AKIMOV, Dmitry (ITEP and MEPhI); Mr. SIMAKOV, Grigory (ITEP)

Session Classification : Nuclear physics and particle physics - parallel VIII

Track Classification : Nuclear physics and particle physics