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Search for naturally occurring seaborgium with radiopure $^{116}CdWO_4$ crystal scintillators

Tuesday 6 September 2022 15:30 (20 minutes)

A detector containing two radiopure cadmium tungstate crystal scintillators enriched in ^{116}Cd at 82% ($^{116}CdWO_4$) with total mass of 1.2 kg was operated during 35324 h at the Gran Sasso Underground Laboratory (INFN, Italy) with the main aim to investigate double beta decay of ^{116}Cd. As a by-product of the experiment, a new upper limit on atomic abundance of hypothetical naturally occurring long-lived seaborgium (eka-tungsten, Z=106) in tungsten was set at 5.1×10^{-15} atom (Sg)/atom (W) with 90% C.L. (assuming the Sg half-life of 10^9 yr) by the analysis of the alpha decay events. This limit is better than those obtained with a $ZnWO_4$ scintillator and in other types of experiments, which used the accelerator mass spectrometry or searched for spontaneous fission of superheavy elements.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

Experiment at Gran Sasso Underground Laboratory

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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