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Investigation of rare nuclear decays of naturally occurring osmium isotopes accompanied by γ quanta.

Thursday 1 September 2022 15:30 (20 minutes)

A search for rare nuclear decays of the naturally occurring osmium isotopes accompanied by γ quanta has been performed using an ultra-low-background germanium γ detectors and an ultrapure osmium sample at the Gran Sasso National Laboratory of the INFN (Italy).

The final results on the 2β and α decays of osmium isotopes obtained in three experimental stages will be presented in this talk.

During the data taking with the γ detector, no effect has been detected, and lower limits of the half-life of the naturally occurring osmium isotopes relative to α and 2β decays of ^{184}Os and ^{192}Os were set at the level of $10^{15}\text{--}10^{20}$ yr.

In the case of α decays of ^{184}Os and ^{186}Os to the first excited levels of daughter nuclei, the limits substantially exceed the present theoretical estimates of the decays probabilities. New experimental perspectives to detect the α decays of ^{184}Os and ^{186}Os and improve the experimental sensitivity to the 2β processes in ^{184}Os and ^{192}Os will be discussed.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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