Contribution ID: **10** Type: **Oral presentation**

Searches for neutrinoless double beta decay

Tuesday 10 October 2023 14:30 (30 minutes)

With the discovery of neutrino oscillations and demonstrating that neutrinos have a mass, the Standard Model of particle physics is to be insufficient to describe it. It is too small to be explained with the Standard Model, hence other mass creating mechanisms must exist. In some of these models the neutrino is its own anti-particle. The practical only way to prove this Majorana nature of the neutrinos is neutrinoless double-beta decay. Experiments designed to search for this decay are probes into particle and nuclear physics beside accelerator-based experiments.

I will give an introduction about the physics of neutrinoless double beta-decays and overview on the techniques of the major efforts around the world. A number of experimental results now exclude neutrinoless double-beta decay up to 10^{26} years. The results start to reach a region where the neutrino mass hierarchy model can have significant impact on the interpretation of results. I will show what requirements are needed to push further with the goal to completely cover one of two hierarchy models. I will give an overview on how the next-generation of ton-scale sized experiments approach the experimental challenges.

Is this abstract from experiment?

No

Name of experiment and experimental site

LEGEND

Is the speaker for that presentation defined?

Yes

Details

Ralph Massarczyk

Internet talk

No

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