

LNGS SEMINAR SERIES

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Limits on the Pauli-forbidden transitions in ^{12}C nuclei obtained with low-background Borexino detector

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Abstract

The Pauli exclusion principle (PEP) has been tested for nucleons (n,p) in ^{12}C nuclei with the Borexino detector. The approach consists of a search for γ , n , p and β^\pm emitted in a non-Paulian transition of $1P_{3/2}$ -shell nucleons to the filled $1S_{1/2}$ shell in nuclei. Due to the extremely low background and the large mass of the Borexino detector, the most stringent/competitive up-to-date experimental bounds on PEP-violating transitions of nucleons and on the relative strengths for non-Paulian electromagnetic, strong and weak transitions have been established.

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