

Testing the Pauli Exclusion Principle for Electrons at LNGS

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“One of the fundamental rules of nature and thus of modern physics is represented by the Pauli Exclusion Principle (PEP).

We know that this principle is extremely well fulfilled due to many observations. Many experiments were performed to search for a tiny violation of PEP in various systems with different assumptions. The experiment VIP at the Gran Sasso underground laboratory is searching for possible small violations of the Pauli Exclusion Principle for electrons leading to forbidden X-ray transitions in copper atoms. VIP is aiming at a test of the Pauli Exclusion Principle for electrons with high accuracy, down to the level of 10^{-29} , thus greatly improving the previous limit. ☒

The experimental method, results obtained so far and new developments of a follow-up experiment VIP2 at Gran Sasso to further increase the precision by 2 orders of magnitude will be presented.”

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