

Pauli Exclusion Principle tested with VIP2 - J. Marton for the VIP2 Collaboration

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The Pauli Exclusion Principle (PEP) is one of the most fundamental pillars of physics and it has tremendous consequences - from the stability of matter to atomic and subatomic systems. According to many observations PEP must be valid to an extremely high degree and no violations were found up to now. On the other hand a simple explanation of PEP is missing. Numerous experimental investigations were performed to search for a tiny violation in different systems. The experiment VIP2 at the Gran Sasso underground laboratory is designed to test the PEP for electrons with high sensitivity by searching for forbidden X-ray transitions in copper atoms. VIP2 aims to improve the PEP violation limit obtained with our preceding experiment VIP by orders of magnitude. The experimental method, comparison of different PEP tests based on different assumptions and the developments for the VIP2 setup will be presented.

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