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High sensitivity test of the Pauli Exclusion Principle for electrons with X-ray spectroscopy (VIP2)[1] JOHANN MARTON, Stefan Meyer Institute, Austrian Academy of Sciences, VIP2 COLLABORATION — The Pauli Exclusion Principle (PEP) is one of the most fundamental rules in physics and it has various important consequences ranging from atomic and subatomic systems to the stability of matter and stellar objects like neutron stars. Due to many observations This rule must be valid to an extremely high degree and consequently no violations were found so far. On the other hand a simple explanation of PEP is still missing. Many experimental investigations based on different assumptions were performed to search for a tiny PEP violation in various systems. The experiment VIP2 at the Gran Sasso underground laboratory (LNGS of INFN) is designed to test the PEP for electrons with high sensitivity by searching for forbidden X-ray transitions in copper atoms. This experiment aims to improve the PEP violation limit obtained with our preceding experiment VIP by orders of magnitude. The experimental method, comparison of the VIP result with different PEP searches and the present status of the VIP2 experiment will be presented.

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