

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**The Pauli Exclusion Principle for electrons – a high sensitivity test in Gran Sasso underground laboratory** JOHANN MARTON, Stefan Meyer Institute, Austrian Academy of Sciences, VIP COLLABORATION — One of the fundamental rules of nature and a pillar in the foundation of quantum theory and thus of modern physics is represented by the Pauli Exclusion Principle. We know that this principle is extremely well fulfilled due to many observations like the order of the elements and the stability of matter. Numerous experiments were performed to search for tiny violation of this rule in various systems. The experiment VIP at the Gran Sasso underground laboratory is searching for possible small violations of the Pauli Exclusion Principle for electrons leading to an “anomalous” X-ray transition in copper atoms. VIP is aiming at a test of the Pauli Exclusion Principle for electrons with unprecedented accuracy, down to the level of  $10^{-29}$  -  $10^{-30}$ , thus improving the previous limit by 3-4 orders of magnitude. The experimental method, the setup, results obtained so far and future plans to further increase the precision by 2 orders of magnitude will be presented.

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Date submitted: 26 Nov 2011

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