

Workshop Quantum Foundations. The physics of "what happens" and the measurement problem

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Can a Pauli-forbidden atomic transition happen?

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The Pauli Exclusion Principle (PEP) and its connection to the spin-statistics theorem is empirically very well proved in fermionic systems. However, from theoretical considerations there are speculations about possible violations in the lepton sector, i.e. for neutrinos, which would have severe consequences for cosmology. In an experiment at the Gran Sasso Laboratory (LNGS-INFN) we are searching for the limit of the validity of PEP for leptons by searching PEP-forbidden electron transitions in a high-sensitivity experiment VIP2. The underlying concept of this experiment, preliminary results and an outlook for the next steps will be given.

Presenter: Dr MARTON, Johann (Stefan Meyer Institute)