

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

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Quantum formulation of the Einstein Equivalence Principle

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The Einstein Equivalence Principle (EEP) enables understanding gravity as space-time geometry. The principle requires equivalence between the rest, inertial and gravitational mass-energies. However, in quantum mechanics, even non-relativistic, quantized internal energies contribute to the total mass-energies. In the talk I will introduce a "quantum formulation of the weak EEP" as the equivalence between the rest, inertial and gravitational internal energy operators. Importantly, validity of the classical EEP does not imply the validity of its quantum formulation, which requires an independent experimental verification. I will explore the ways to test the quantum EEP.

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