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# Standard Model Tests with PERC

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We address a number of questions which are at the forefront of particle physics, with main emphasis on the search for new physics beyond the Standard Model of particles physics, and in particular, on the question of unification of all forces shortly after the Big Bang. This grand unification is not part of the Standard Model, and new symmetry concepts are needed like left-right symmetry, fundamental fermion compositeness, new particles, leptoquarks, supersymmetry, and many more.
We present a case study on a new type of cold neutron beam station PERC, for the investigation of various observables in free neutron's b-decay. With PERC, we will be able to obtain a beam of decay electrons and protons under well-defined and precisely variable conditions from the cold neutron beam. Therefore the spectra and angular distributions of the emerging decay particles will be distortion-free on the level of 10-4, more than 10 times better than achieved today.
PERC is part of a priority program SPP 1491 "Precision experiments in particle and astrophysics with cold and ultra-cold neutron"(FWF, Contract No. I 534-N20)

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