



ID contributo: 23

Tipo: non specificato

A new parity violation experiment

mercoledì 17 ottobre 2012 17:40 (35 minuti)

After a series of parity violating electron scattering experiments which explored the strangeness content of the nucleon, we plan on a new, improved parity violation experiment

where we will measure the weak charge of the proton with a relative accuracy of 1.7%. This accuracy results in a measurement of the effective electroweak mixing angle $\sin^2 \theta_W$ of 1.5 per mille, which is an important input parameter of the standard model. The target accuracy is comparable to measurements stemming from the Z-pole.

The new parity violation experiment will be able to test new physics beyond the standard model up to a scale $\Lambda = 6,4$ TeV.

The measurement will be performed a low beam energy with a momentum transfer q between 50 and 70 MeV, thus beeing sensitive to dark parity violating extra Z-boson in this mass range.

The expected accuracy will be discussed and the experimental strategy will be presented.

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