



Contribution ID: 59

Type: **Parallel contribution**

The Charge Radius of the Proton, a 5 Sigma Discrepancy?

Thursday, 11 August 2011 11:50 (20 minutes)

Recently, the charge radius of the proton was extracted, for the first time, from muonic hydrogen. The value was 5 sigma away from similar measurement of regular hydrogen. The extraction of the charge radius depends on a theoretical input. Together with Richard J. Hill, we are studying the hadronic uncertainty in the theoretical prediction, using the tool of an effective field theory, namely NRQED. In the talk I will report on the results of this study. I will also report on a previous study of the model-independent extraction of the charge radius from electron-proton scattering, which found that previous extractions have typically underestimated their errors.

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Session Classification: Perturbative and non-Perturbative QCD

Track Classification: Perturbative and non-Perturbative QCD