Contribution ID: **119** Type: **Oral Presentation**

Muonic hydrogen

Monday, 5 September 2011 16:35 (30 minutes)

Our recent measurement of the Lamb shift (2S-2P energy splitting) in muonic hydrogen [1] has created a puzzle. The value of the proton rms charge radius we deduce, Rp = 0.84184(67) fm, is ten times more accurate, but 4% smaller than the values deduced from both hydrogen spectroscopy and elastic electron scattering.
In addition, we have determined the 2S hyperfine splitting in muonic hydrogen from which the Zemach radius of the proton is determined. The Zemach radius is a measure for the magnetisation distribution inside the proton.

[1] R. Pohl, A. Antognini, F. Nez et al. (CREMA collaboration), Nature 466, 213 (2010).
[2] CREMA collaboration, in preparation.

Primary author: Dr POHL, Randolf (Max-Planck-Institut für Quantenoptik)

Presenter: Dr POHL, Randolf (Max-Planck-Institut für Quantenoptik)

Session Classification: Exotic Atoms and Atomic Physics

Track Classification: Other exotic atoms and rare decays