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The proton size, current status and perspectives

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We have obtained a very accurate proton charge distribution radius by measuring the Lamb shift in the 2s level of muonic hydrogen[1]. The value we found, while roughly 10 times more accurate than the one derived from either hydrogen spectroscopy or electron-proton elastic scattering, is 5 standard deviations away. I will show the results of the experiment, the latest theoretical evaluations and discuss the implications of such a large disagreement.

[1] The size of the proton, R. Pohl, et al. Nature 466, 213-216 (2010).

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Classification de thématique: Experiment