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The proton radius puzzle

physikalisches

The determination of the electric proton charge radius from the measurement of the Lamb shift of muonic hydrogen by the CREMA collaboration, and its discrepancy with the, until then, accepted value of the proton radius, obtained as a weighted average of measurements from electron-proton scattering and the regular hydrogen Lamb shift, produced a shock in the scientific community, shaking the, so far accepted, methods and, above all, error analyses of specialized determinations of the proton radius.

Different branches in high-energy, hadron, nuclear and atomic physics, associated with the physics of the different experiments used for these determinations, turned their attention to this problem producing a flurry of activity. In this talk, we review the definition and the different determinations of the electric proton charge radius, and discuss the present status of the proton radius puzzle.

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