



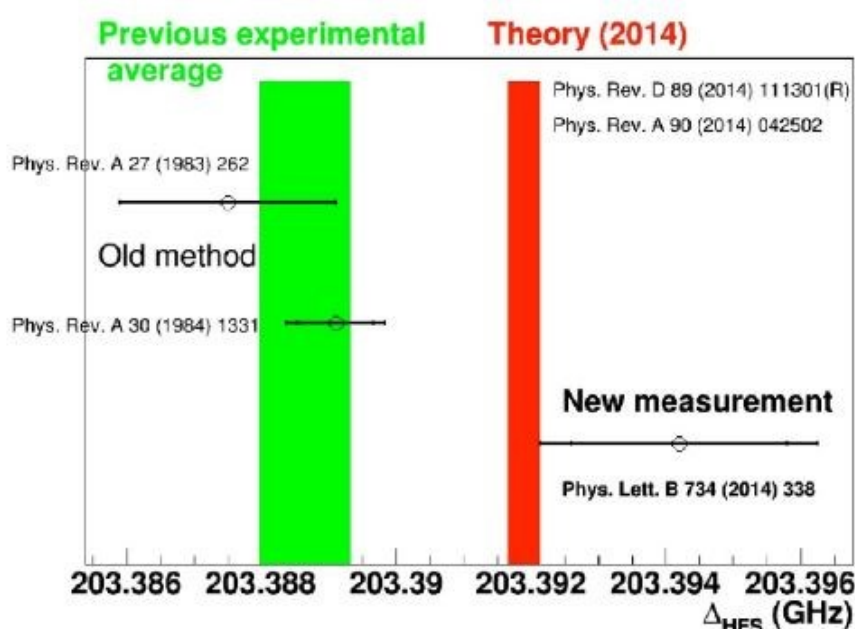
New precision measurement of the hyperfine splitting of positronium.

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16:45 h, Auditorium

Positronium (Ps) is an ideal system for precision tests of bound-state Quantum Electrodynamics (QED). The hyperfine splitting (HFS) on the ground-state Ps, which is one of the most precisely tested quantities, has a discrepancy of 16 ppm (4.5σ) between the averaged previous experimental value and the theoretical calculation with $O(\alpha^3)$ corrections. A new experiment which reduces possible systematic uncertainties of Ps thermalisation effect and non-uniformity of magnetic field was performed to check the discrepancy. It revealed that the Ps thermalization effect was as large as $10 \pm 2\text{ppm}$. Taking into account this effect, a new result of 203.394 ± 0.0016 (stat., 8.0 ppm) ± 0.0013 (syst., 6.4 ppm) GHz was obtained. This result is consistent with the QED prediction within 1.1σ , whereas it disfavors the previous experimental average by 2.6σ . It shows that the Ps thermalization effect is crucial for precision measurements of HFS. In this seminar, I will explain the details of the new experiment. Future prospects to obtain further precision will be also briefly discussed.



Coffee, tea and cookies will be served at 16:30h.

After the seminar there is a chance for private discussions with the speaker over wine and pretzels.

