

PREN & μ ASTI conference

Notes from the Tuesday and Thursday Discussion Lunch

1) Ground state hyperfine splitting in muonic hydrogen

First ambition: muonic hydrogen HFS \rightarrow prediction needed for experiment

Immediate issue: polarizability contribution to the muonic hydrogen HFS in view of new g_{2p} data

- Scaling of H to muonic H theory
- Leading uncertainty in H HFS from QED side: 3-loop
- New measurement of 2S-1S HFS difference in H and D

2) Muonic Atoms

- Radiative corrections to elastic 2PE and radiative recoil as a cross check to existing calculation
- Discrepancies for muonic deuterium, helium, lithium-6 HFS make this interesting; no good formalism existing \rightarrow total 2PE / 3PE?
- Dispersive evaluation of muonic helium-4 2PE?

3) General questions

How far should μ ASTI reach beyond light muonic atoms?

- Precise charge radii as input for beta decay calculations
- Nuclear distribution in radioactive isotopes
- Bound electron g factor measurements
- Mirror nuclei charge radii are sensitive to isospin breaking

How much can we trust?

- Theory prediction for heavier muonic atoms (carbon, lead)
- King plots