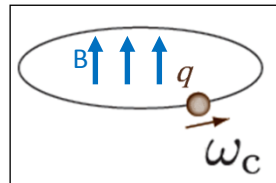
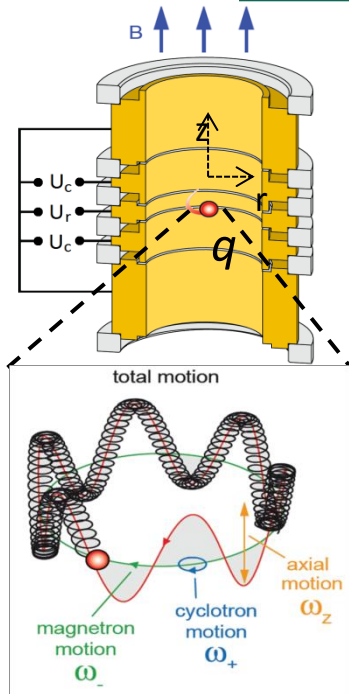
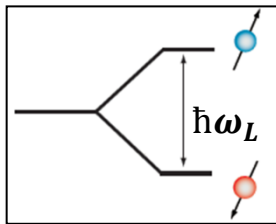


# The ALPHATRAP g-Factor Experiment

probe QED at the boundary of our knowledge in the most extreme fields



$$\omega_c = \frac{qB}{m}$$



$$\omega_L = \frac{g}{2} \frac{e}{m_e} B$$

independent experiments

$$g = 2 \frac{\omega_L}{\omega_c} \frac{m_e}{m_{ion}} \frac{q_{ion}}{e}$$

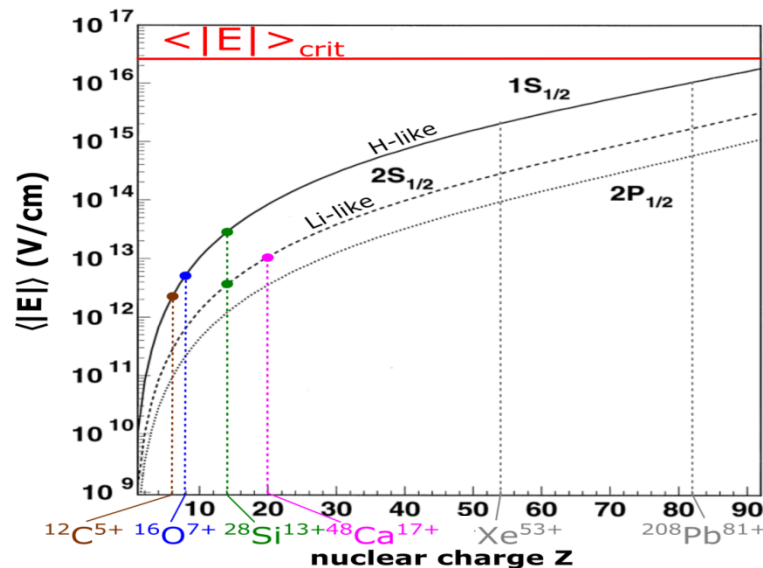
has to be measured

## QED tests in medium-Z systems:

- most stringent test of bound-state QED in hydrogen- and lithium-like systems:

$^{28}\text{Si}^{13+}$  [Sturm et al., PRL 107, 023002 (2011)]

$^{28}\text{Si}^{11+}$  [Wagner et al., PRL 110, 033003 (2013)]



Pushing g-factor experiments to



heavy-Z systems

experiment

theory

$^{28}\text{Si}^{13+}$

$$\delta g/g = 7.0 \times 10^{-11}$$

$$\delta g/g = 8.5 \times 10^{-10}$$



$^{28}\text{Si}^{11+}$

$$\delta g/g = 1.1 \times 10^{-9}$$

$$\delta g/g = 2.5 \times 10^{-8}$$

