

SUMMARY OF RESULTS OF THE LAMB SHIFT IN H.

Relative Wavenumber Shift

$$\frac{\Delta \tilde{\nu}}{\tilde{\nu}} = \frac{d}{\sqrt{2}(2\pi)^{3/2}} \frac{a}{r_{\text{vac}}} \quad - (1)$$

1s Orbital

$$\frac{1}{r_{\text{vac}}} (1s) = \frac{\hbar}{2mca} \cdot \frac{1}{2\pi^{1/2}} \cdot \left(\frac{1}{r} - \frac{1}{2a} \right) \quad - (2)$$

2s Orbital

$$\frac{1}{r_{\text{vac}}} (2s) = \frac{\hbar}{2mca} \cdot \frac{1}{2\pi^{1/2}} \cdot \left(\frac{2}{r} - \frac{5}{4a} + \frac{r}{8a^2} \right) \cdot \left(2 - \frac{r}{a} \right) \quad - (3)$$

2p_z Orbital

$$\frac{1}{r_{\text{vac}}} (2p_z) = \frac{\hbar}{2mca} \cdot \frac{1}{2\pi^{1/2}} \cdot \left(\frac{5}{8a} - \frac{1}{r} \right) \cos \theta \quad - (4)$$