Nuclear Engineering 150 – Discussion Section
Extra problems to save for review/backup

More relevant

< None at the moment >

Less relevant

Problem

Recall from mechanics that centripetal force is $F_{\text{cent}} = -\frac{mv^2}{r}$ and recall from E&M that the Coulombic force is $F_{\text{coul}} = -\frac{Ze^2}{r^2}$. Solve for the Bohr radius of the orbit of an electron on hydrogen, assuming the angular momentum $L = mvr$ is quantized multiples of $\hbar$ ($1\hbar$, $2\hbar$, $3\hbar$, etc). Compare this to the measured value of $5.2917721067(12) \times 10^{11}$Å , the most probable distance between an electron in the ground state and the nucleus of a hydrogen atom.