Physics 611   Homework #6   Spring '22

Dr. Drake

1. Jackson 5.14: Calculate the magnetic fields everywhere. Skip the plots. For $\mu \gg \mu_0$ and $b - a \ll a$ but with $(\mu - \mu_0)(b - a) \gg \mu_0 b$ calculate the lowest order expressions for the magnetic field in the three regions. What is the size of the region where $\mathbf{B}$ is strongly affected by the cylinder. Estimate the magnetic field in the three regions based on simple physical arguments and check their consistency with your earlier expressions.

2. Jackson 5.27

3. Jackson 6.11

   Hint: The solar wind velocity is around $400 km/s$ and the proton number density is around $10/cm^3$.