

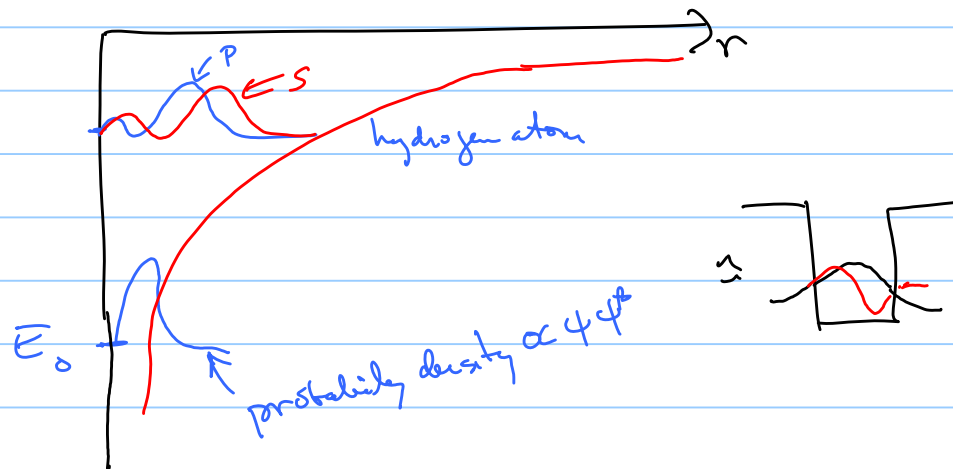
# Lecture 16

Note Title

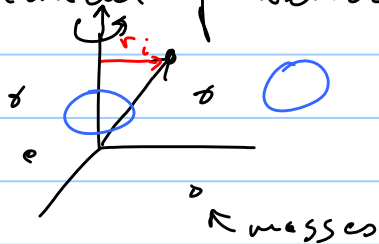
2/20/2006

Hydrogen atom solve Sch. eqn  
(Sep. variables)

⊕ ⊖

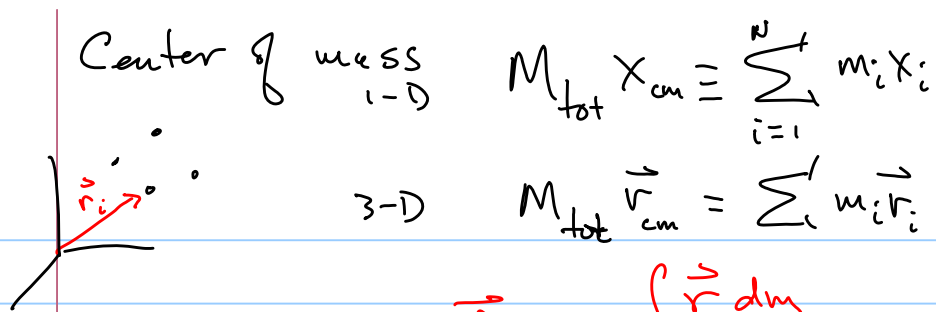


Moment of inertia



$$I = \sum_{i=1}^N m_i r_i^2$$

defined wrt axis of rotation



Center of mass  
1-D

$$M_{\text{tot}} x_{\text{cm}} = \sum_{i=1}^N m_i x_i$$

3-D

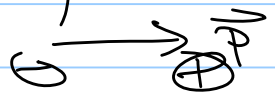
$$M_{\text{tot}} \vec{r}_{\text{cm}} = \sum_i m_i \vec{r}_i$$

$$\vec{r}_{\text{cm}} = \frac{\int \vec{r} dm}{\int dm} \quad dm = \rho dV$$

↑  
mass density

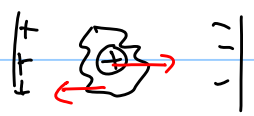
Moment of inertia, center of mass are defined wrt to some coordinate system.

dipole moment (if  $Q_{\text{tot}} = 0$ ) is indep. of coordinate system

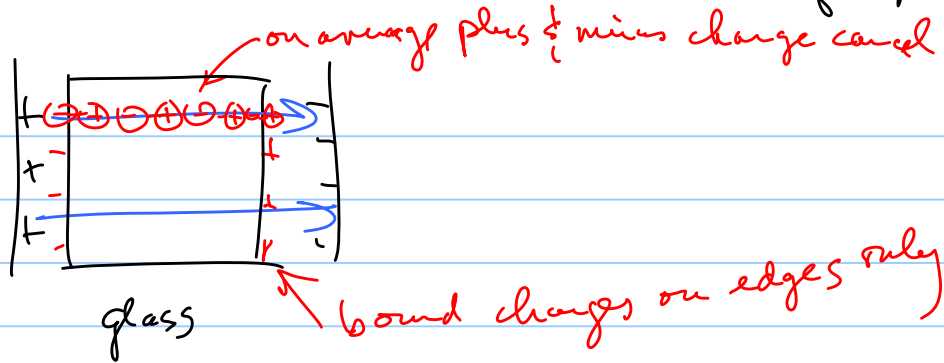


Dielectrics: consist of electric dipoles made

- permanent dipoles
- induced



Method to deal with matter (bunch of dipoles)



To solve for fields inside & outside

- throw away material & keep only  $\sigma_{\text{bound}}$

