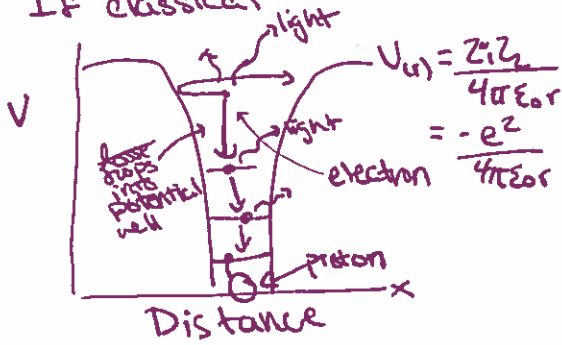


# Lecture 4

Does the hydrogen atom exist, or are there only neutron balls



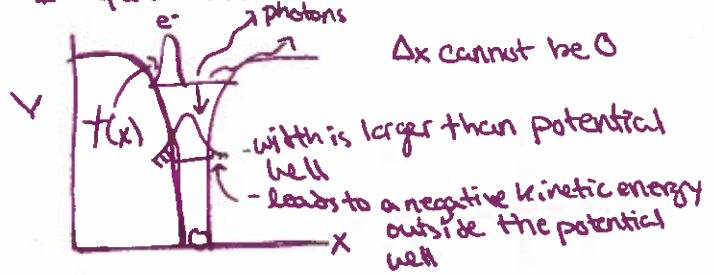
If classical



total energy of e- = 
$$\frac{p^2}{2m_e} - \frac{e^2}{4\pi\epsilon_0 r}$$

Problem: electron will fuse w/ a proton → makes neutron

If quantum =

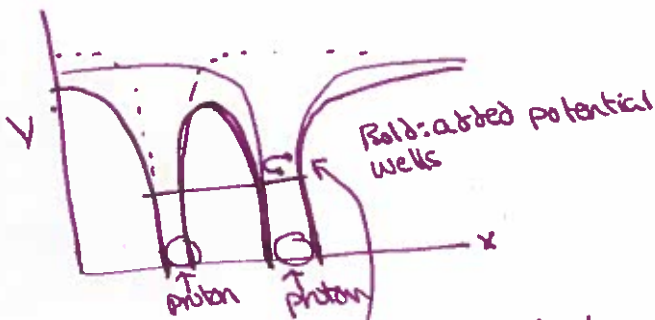


- electron stops... gets to a point where it can drop deeper into the well.  
- The ground state (1s state)

Q: why not make  $\Delta x$  smaller (and increase  $\Delta p$ ) to  $\psi$  lower?

A: - if p increases, then total increase - moves to a higher energy level

Assume CM can stabilize an H<sub>2</sub> atom:



the particle is stuck in one well, bc there is still a barrier the electron can't cross

- If e- TE to get over well, the energy is so high you can't make a chemical bond.

