The Setup
The Paddles
Cosmic Rays

What are they?

- Loose term – High energy particles that continually bombard the Earth from space
- Usually photons, but also can be charge particles
- Creates Showers in the atmosphere
Where do they come from?

Origins are hard to describe

- Interstellar, intergalactic, our own sun, etc.
- In the case of photons, stars, black holes, quasars, etc.
- In the case of charged particles, anywhere within the galaxy
Air Shower

- What you’ll really be detecting are air showers from cosmic rays.
Simulation of Air Shower
So What is a Muon?

- Heavier cousin to the electron (by a factor of 200)
- Has a charge of + or – one (matter vs. antimatter)
- Unstable (yet it still makes it miles through the atmosphere)
But Why Muons?

- Penetrates all the way through the atmosphere to sea level and even through this building.
- Other radiation from cosmic rays is stopped by atmosphere.
- Can do coincidence run to filter out signals other than muons.
- Neat way to see bizarre particle.
What can you do with this experiment?

- Look at properties of cosmic rays
- Figure out how fast these things are going
- Figure out life time of the muon (it is an unstable particle)
- Use your imagination