

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Per: \_\_\_\_\_

### Physics: **Particle Adventure Webquest**

Start at: <http://particleadventure.org/> Click on the “Standard Model” button

Use the arrows at the top of the page to scroll through the pages. Be sure to read as you go along. Use this activity to reinforce our discussion in class about particle physics. As you go along, try to answer the following questions.

1. How has our understanding of fundamental particle evolved?
2. What particles and forces are members of the Standard Model? How are they related?
3. For how many years have physicists known that there were more than just protons, neutrons,

Be sure to check out the Particle Physicist’s Good Pun ☺

Another funny site that is good with speakers is <http://pdg.lbl.gov/quarkdance/>

4. What is a quark? How are they described?
5. What arrangement of quarks makes up a proton? A neutron? What other types of particles are made up of quarks.
6. Which lepton are we the most familiar with? What other kinds of leptons are there?

In the “What holds it together” section, read about the strong force.

7. Explain the strong force in terms of quarks and gluons
8. Read the section on quark confinement. Why can quarks not be pulled apart?

Check out the Major Accelerators. Read through the section on accelerometers

9. Find the Stanford Linear Accelerator on the list. What major discoveries were made there?

10. The accelerator at Stanford is a linear accelerator. What are the advantages of a linear accelerator?
  
11. Go to: <http://home.web.cern.ch/topics/large-hadron-collider> to read about CERN's large hadron collider. How does the size and power of the CERN LHC compare to our own Stanford Linear Accelerator.
  
12. List the other accelerators, where they are located, and What type of accelerator it is (some have more than one and some you can't tell so get as much info as you can)?

Return to Particleadventure.org and go to "The Fireworks of Particles"  
Enter the Site and choose "Play with Elementary Particles." Build your own Hadrons from quarks in the GAME.

Try

1. up, up, down =
2. down, down, up =
3. antiup, antiup, antidown =
4. strange, antistrange =

List your findings:

Have fun. Check out some of the other games and sections you didn't get to do. Come back and visit this site this summer when you run out of video games at home. Keep a window open to this site and leave it on your computer, so people will think you are really smart!