

Design Template

Activity Name: PARTICLE ACCELERATOR Date: 6/20/08

Design Team: JOHN SERVANDA AND PROFESSOR KYLE COLE

Content Goals:

Students will understand that inertia, magnetic forces, and momentum are the factors that will affect how the particle accelerator works.

Process Goals:

- Be able to work as a team.
- Be able to properly use the science method.
- Be able to orally present to the class.

Attitudinal Goals:

- Encourage interest in science.
- Inspire innovation and creativity.
- Get students exposed to particle acceleration.

Science Standards:

California 8th grade Science Standards:
1, 1a, 1d, 2, 2a, 2b, 2e, 7, and 7a.

Prior Knowledge Assumed

Students must have been exposed to Newton's Laws of Motion, Basic principles of Magnetism, and the Law of Conservation of Momentum.

Lesson Outline: What the students do

Before Lab:

- Review Newton's Laws of Motion, Basic Magnetism, and Momentum.

During Lab:

- Building accelerator according to specs.
- Experiment and determine how the accelerator works.
- Hypothesize how to increase or decrease the force of the accelerated projectile.
- Write up results and present to class.

After Lab:

- Speculate practical applications of particle acceleration.
- Discuss SLAC

Describe how the activity components achieve your goals:

- Because students would have gone over Newton's Laws of Motion, they should be able to explain how the accelerator works and how it can be applied.
- This activity can lead to discussions of particle acceleration science, like SLAC.
- Eventually this will lead into discussions about particle size and the Nanoscale.
- The Nanoscale cards could then be introduced.

Assessment methods:

- Use a simple rubric to help students identify what makes a good lab report and an oral report.

When would you integrate this into your curriculum?

- Around late September, early October when the class studies Motion and Forces and then revisit the activity when we study Energy around December.