

The background of the slide features the Fermilab logo, which consists of a series of concentric, overlapping circles and radial lines that create a grid-like pattern. The lines are thin and light gray, set against a dark gray background.

Fermilab

Jesse Chvojka
University of
Rochester

PARTICLE Program

Aerial view of the lab



From 0 to 99.99% the speed of light

- Protons boosted in energy in series of steps – analogous to gears in a car
- Protons used to make anti-protons (antimatter)
- Accelerated then injected into Tevatron



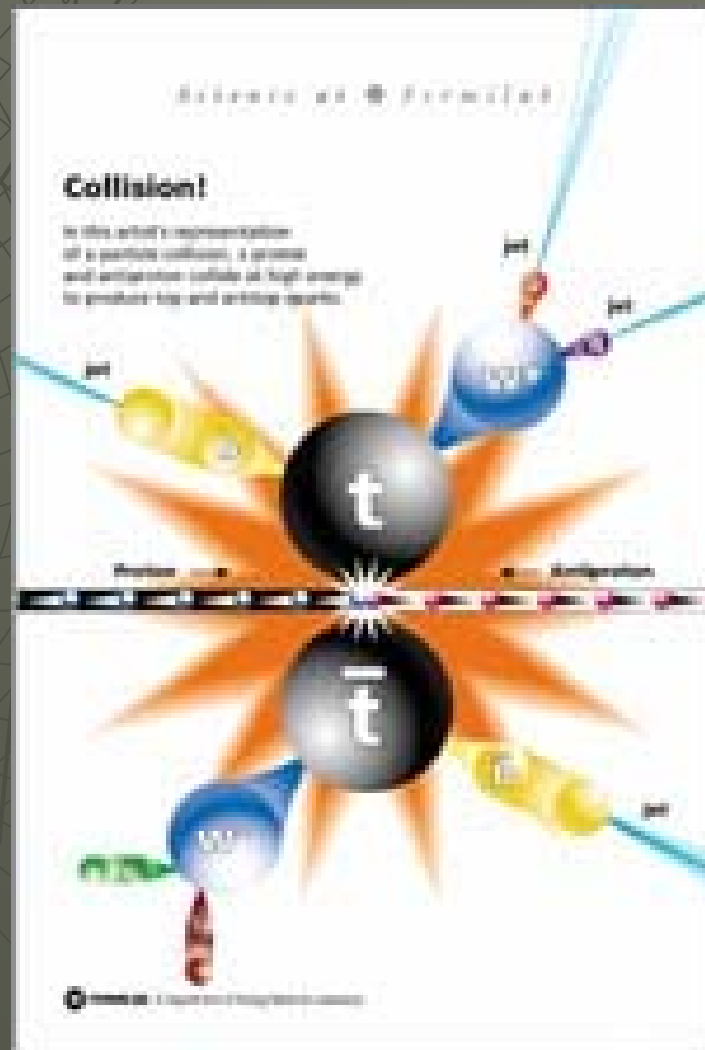
Tevatron

- ◆ Main Accelerator at Fermilab
- ◆ Where protons and anti-protons achieve their maximum energy at which point they are ready for collision
- ◆ Proton/Anti-Proton annihilate into energy in collision



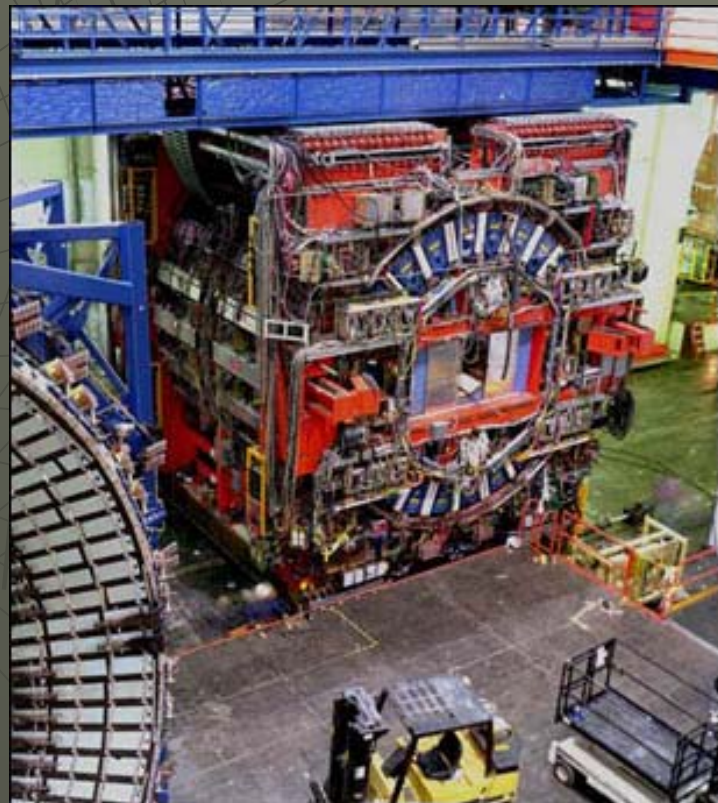
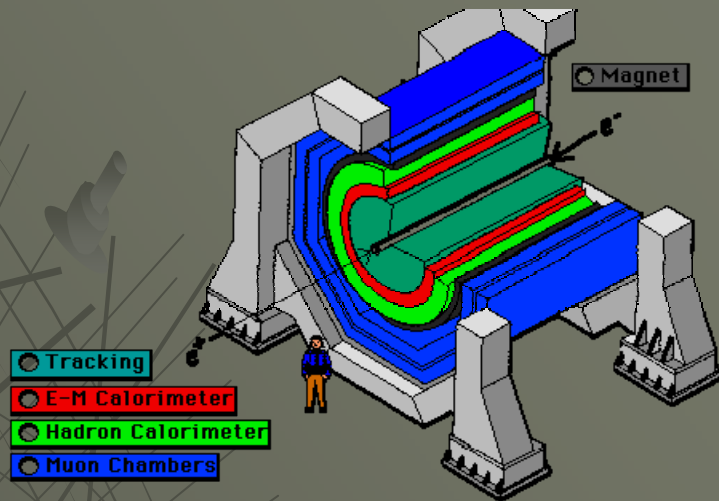
What happens in a collision?

- Create new forms of matter
- Explore properties of fundamental particles
- Learn about fundamental forces
- Precision tests of the Standard Model



Detecting what happens

- ◆ Main detectors are CDF and D0
- ◆ Detector analogous to cloud chamber in some ways
- ◆ Event is reconstructed with electronics, then analyzed



Example of a top quark event at CDF

