Fermilab

Jesse Chvojka
University of Rochester
PARTICLE Program

Aerial view of the lab

From 0 to 99.99% the speed of light

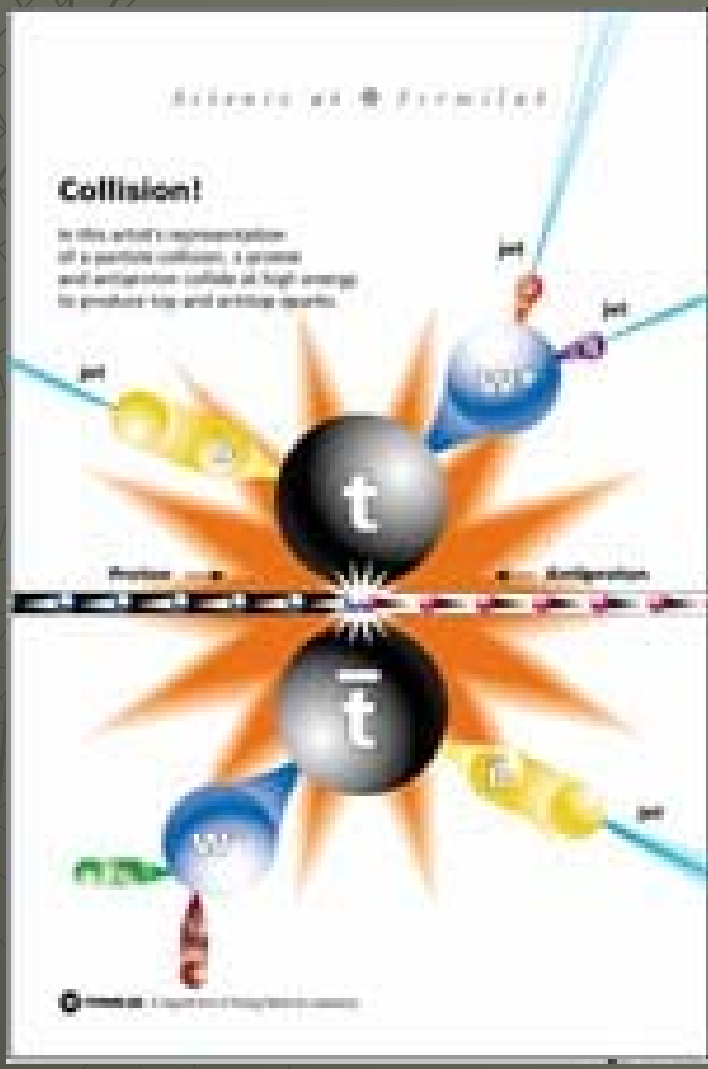
- Protons boosted in energy in series of steps – analogous to gears in a car
- Protons used to make anti-protons (antimatter)
- Accelerated then injected into Tevatron

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

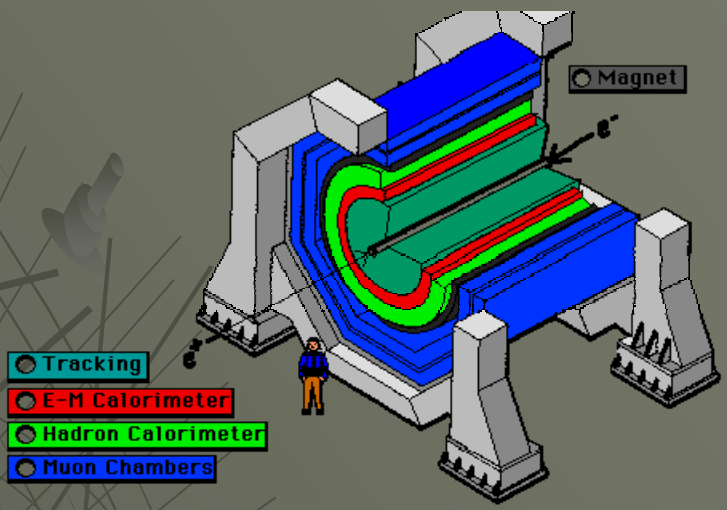
What happens in a collision?

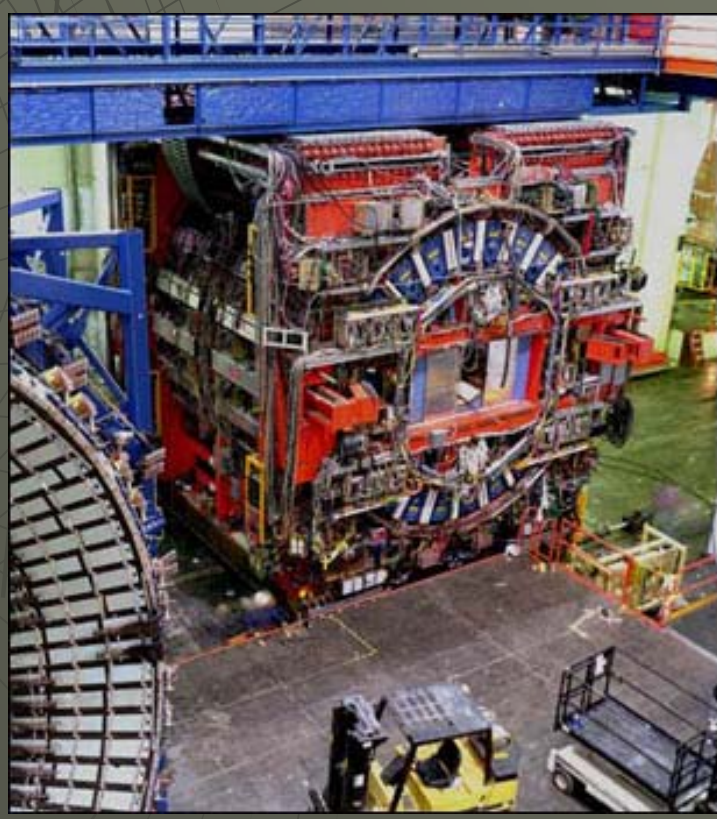
- Create new forms of matter
- Explore properties of fundamental particles
- Learn about fundamental forces
- Precision tests of the Standard Model



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