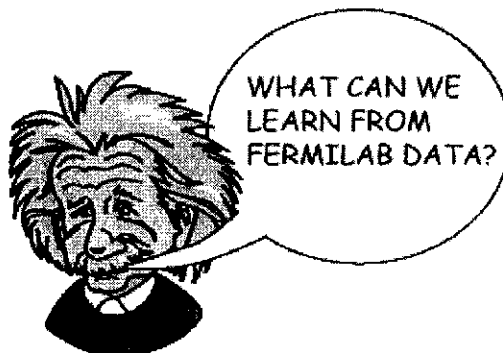


Searching for Top

How do today's scientists use conservation of momentum?

Particle physicists verify Einstein's famous equation $E=mc^2$ every day in accelerators around the world. They convert energy into mass almost as commonly as you flip through channels on the television.



In 1995 physicists who work at Fermilab created the last and most massive quark ever discovered, the top quark, by converting mass into energy and then energy into mass!

You can use the principle of conservation of momentum which you have been studying and 1995 experimental data to determine the mass of the top quark. The D-Zero Experiment

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Available on CD-Rom

Last Update: December 13, 2002

<http://www-ed.fnal.gov/samplers/hsphys/activities/students/index.html>

Determine the Top Quark Mass

Name: _____

1. Draw your vector diagram here:

2. Fill in all the momentum values from your color plot in the table below. Add the measured value for the neutrino.

Momentum, Energy or Mass	Jet 1	Jet 2	Jet 3	Jet 4	Muon	Soft Muon	Neutrino

3. Based on your calculations, the mass of the top quark is :