PHYS 3446 – Lecture #14

Wednesday, Oct. 25, 2006
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1. Particle Accelerators
   • Electro-static Accelerators
   • Cyclotron Accelerators
   • Synchrotron Accelerators

2. Elementary Particle Properties
   • Forces and their relative magnitudes
   • Elementary particles
   • Quantum Numbers
   • Gell-Mann-Nishijima Relations
   • Production and Decay of Resonances
Announcements

• Quiz in class next Wednesday, Nov. 1
Principles of Calorimeters

Total absorption calorimeter: See the entire shower energy

Sampling calorimeter: See only some fraction of shower energy

For EM
\[ E = fE_{\text{vis}} = \frac{X_0^{\text{vis}}}{X_0^{\text{abs}} + X_0^{\text{vis}}} E_{\text{vis}} \]

For HAD
\[ E = fE_{\text{vis}} = \frac{\lambda_0^{\text{vis}}}{\lambda_0^{\text{abs}} + \lambda_0^{\text{vis}}} E_{\text{vis}} \]
Example Hadronic Shower (20GeV)