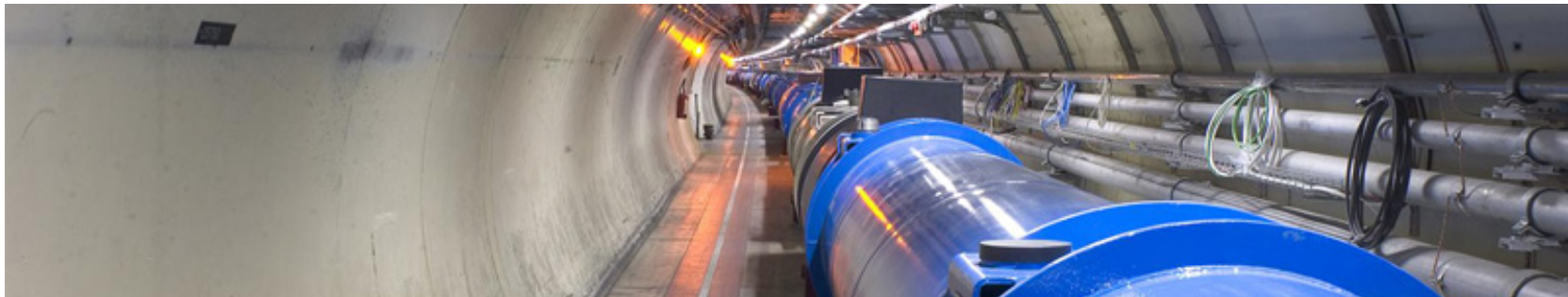


PH3520 / Particle Physics

Autumn term 2011 – week 6



Glen Cowan
Stewart Boogert



The Stanford Linear Accelerator Center (SLAC)



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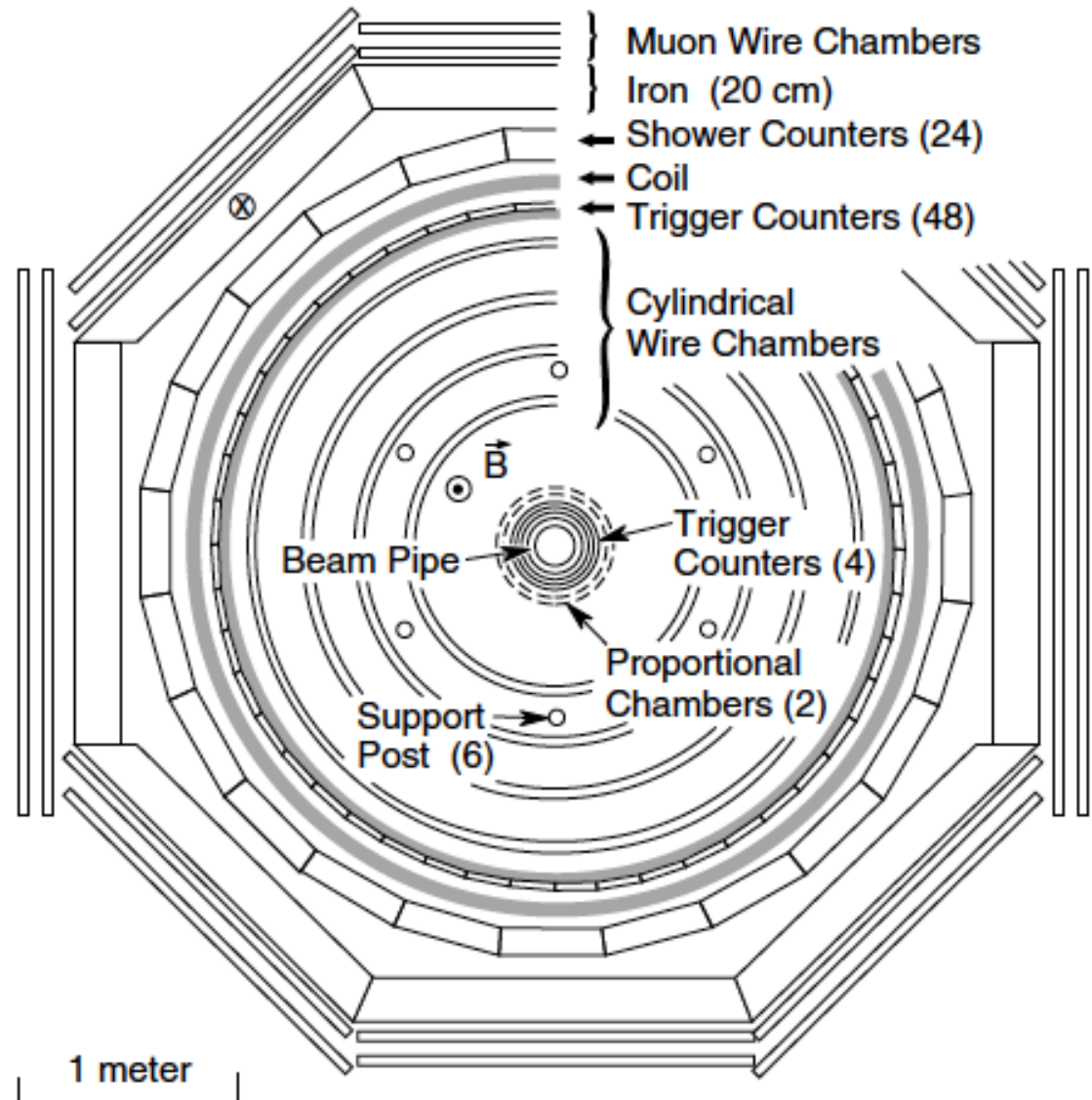
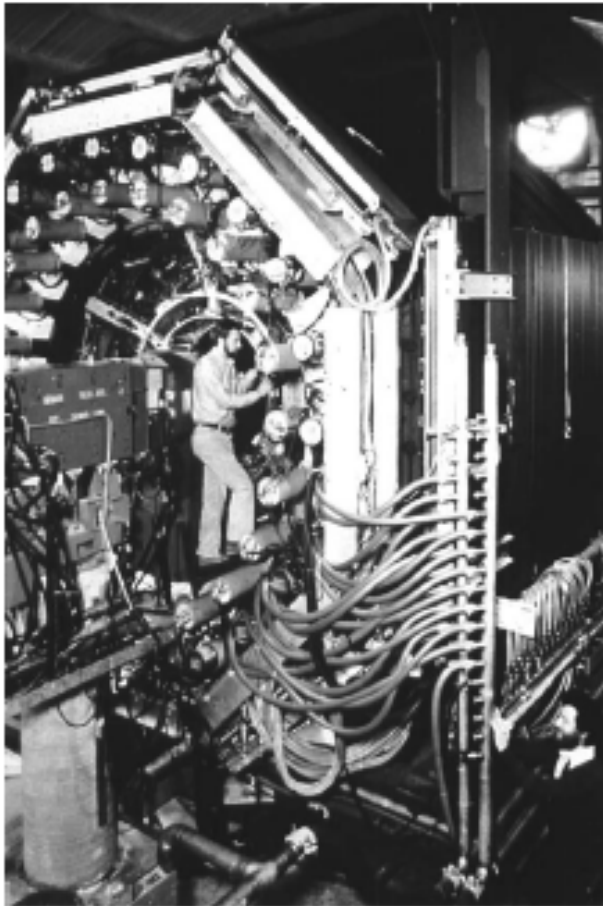


SPEAR

M. Perl, SLAC-PUB-10150 (2003)

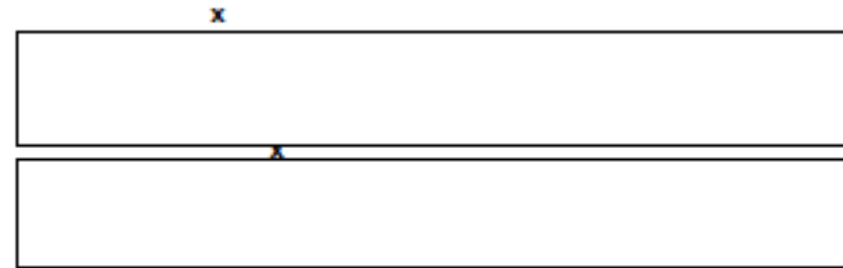


The SLAC-LBL Detector

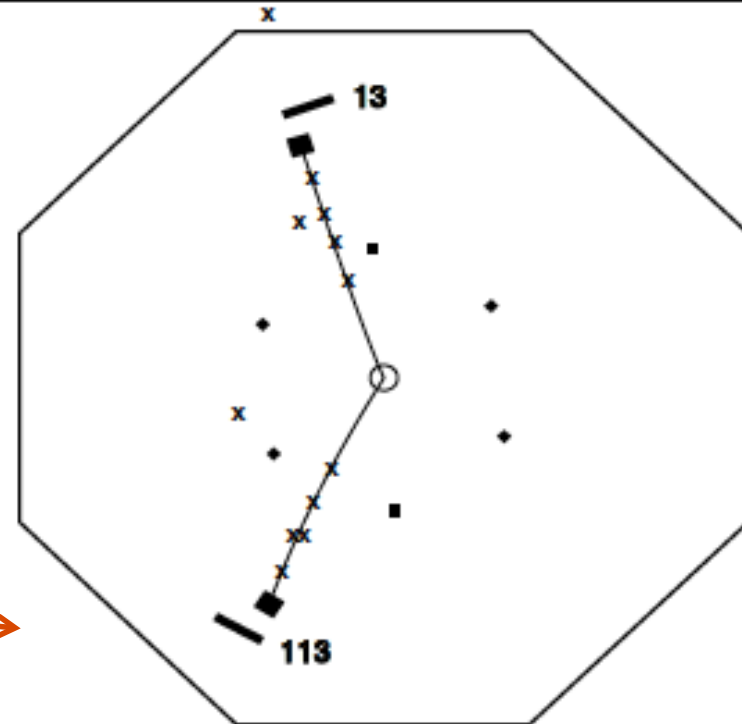




Muon penetrates iron, low EM energy deposit (13)

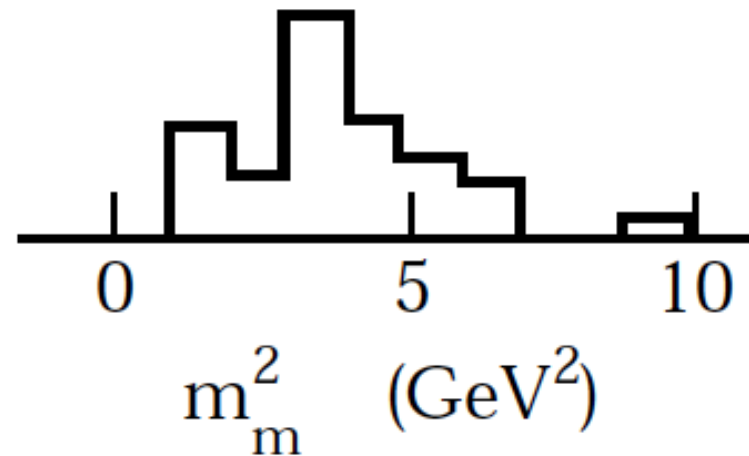


Electron does not reach muon chambers, large EM energy deposit (113)



Missing mass distribution from $e^+e^- \rightarrow \tau^+\tau^- \rightarrow \mu^+e^- + \text{missing energy}$

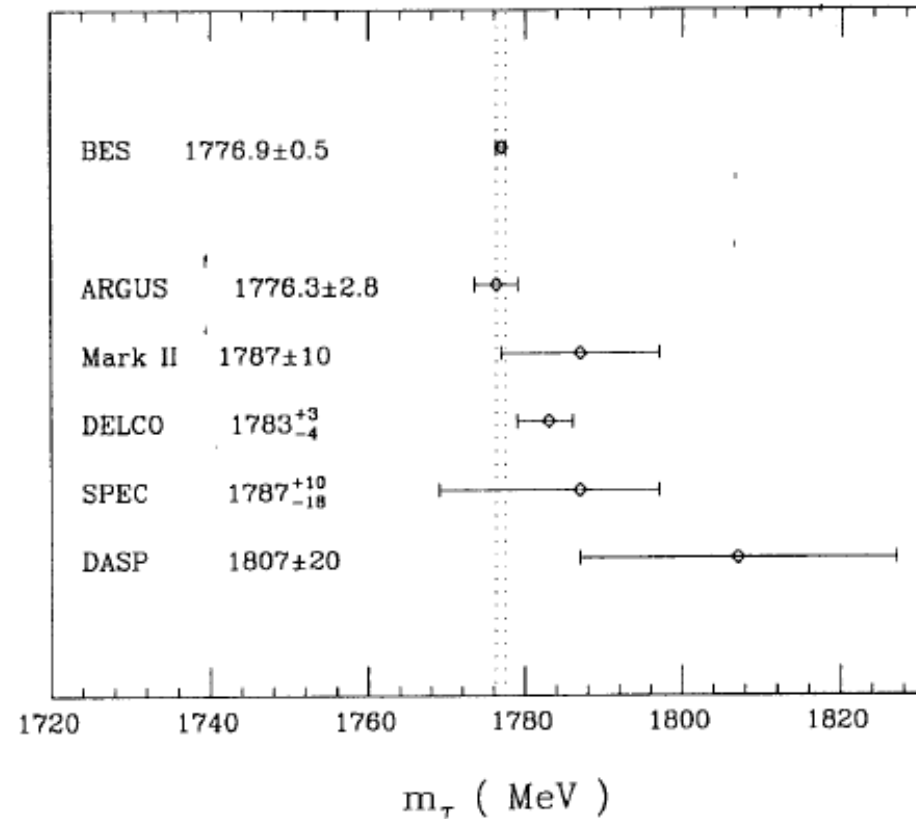
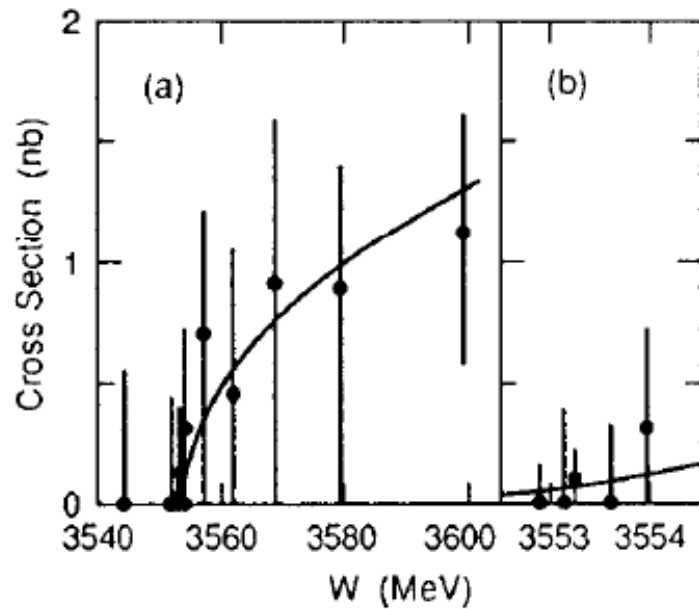
M. L. Perl et al., *Phys. Rev. Lett.* 35, 1489 (1975)

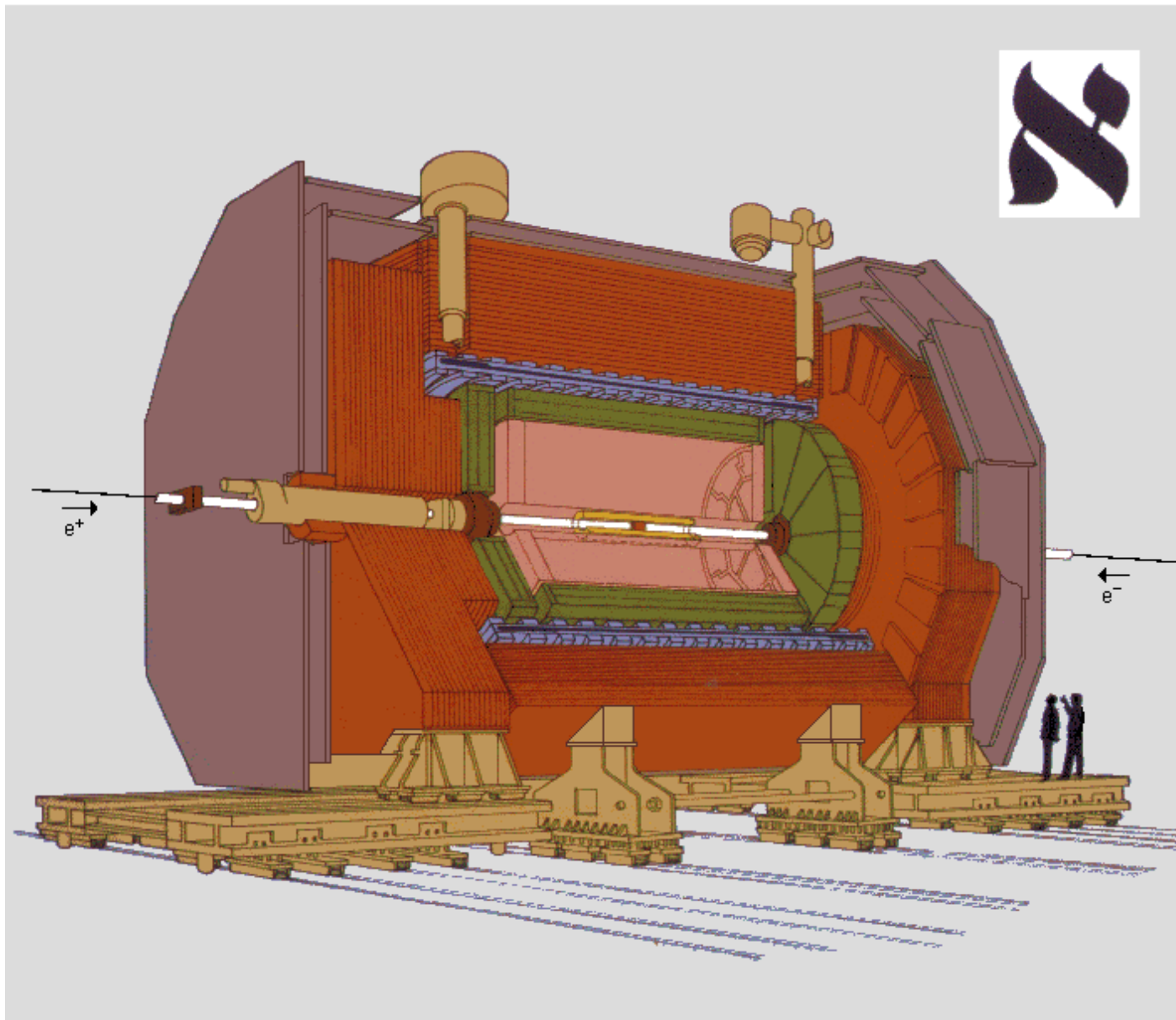










Not all at same mass, therefore missing energy must be carried away by two (or more) invisible particles.

τ 轻子质量 m_τ 精确测量

Accurate measurement of m_τ at Beijing Electron Synchrotron from cross section $\sigma(e^+e^- \rightarrow \tau^+\tau^-)$ versus E_{cm} near threshold.





-  Vertex Detector
-  Inner Tracking Chamber
-  Time Projection Chamber
-  Electromagnetic Calorimeter
-  Superconducting Magnet Coil
-  Hadron Calorimeter
-  Muon Chambers
-  Luminosity Monitors

The ALEPH Detector

$$e^+e^- \rightarrow \tau^+\tau^-$$

