

Computing and Future Colliders

- There are two areas where new colliders are especially important
 - “Higgs factory” – a collider (most probably e^+e^-) with a center of mass energy of 250 GeV and above to study the Higgs boson properties
 - Very low interactions rate of ~ 1 Hz, clean events, very high detectors segmentation
 - Large event size (above LHC) while not many events to store
 - Elaborate simulation and reconstruction – substantial CPU requirements
 - “No triggering” operation
 - “ ~ 100 TeV” pp collider to get to the “next energy frontier” an order of magnitude or so above LHC
 - Required luminosity is above 10^{35} $\text{cm}^{-2}\text{sec}^{-1}$
 - Event size above LHC and high data rate to tape
 - Requires large storage and CPU for data reconstruction and analysis
 - For computing such collider will be about “x10” of HL-LHC demands