

# Energy Calibration Overview

- Baseline design:
  - $\delta E/E \sim 1 \times 10^{-4}$  is required from physics
    - if better precision needed later  $\Rightarrow$  **redesign**
  - Should have something like a 50m footprint
    - put this in your lattice designs
  - $dL/dE$  measurement needed somewhere
    - diagnostics downstream of IP will be important
    - **need a decent extraction line environment** (★)
- Redundant measurements will be necessary
  - cross-checks required
  - more than one technique/location

## ECAL Needs and R&D Plan

- Design Studies (Lattice Locations, Run the Numbers)
    - Schemes:
      - BPM-based Spectrometer
      - WiSRD
      - Laser backscattered electron spectrometer
      - Polarization Rotation
- } Hardware in tunnel
- We should be able to arrive at a consensus as to which methods are most promising!
- Evaluation of Operational issues
  - measurement time required
  - diagnostics provided (bunch-by-bunch?, etc.)

## ECAL R&D II

- RF BPMS:
  - ECAL probably most demanding consumer (~20nm)
  - resolution, electronic stability, stability of null point
  - sensitivity to beam tilts
  - **need experiments!** (ATF?)
- “Straight Line” techniques
  - optical straightness monitor (Oxford)
  - stretched wire systems (CERN)
  - **need experiments!**
- Mechanical stability
  - nanomovers (technical demonstration needed)

## ECAL R&D III

- Beam Tests Required
  - too many surprises in past experiences
  - careful design, iteration will be necessary
  - try to get as close as possible to LC conditions