

Test Beam Needs for ILC Tracking Systems



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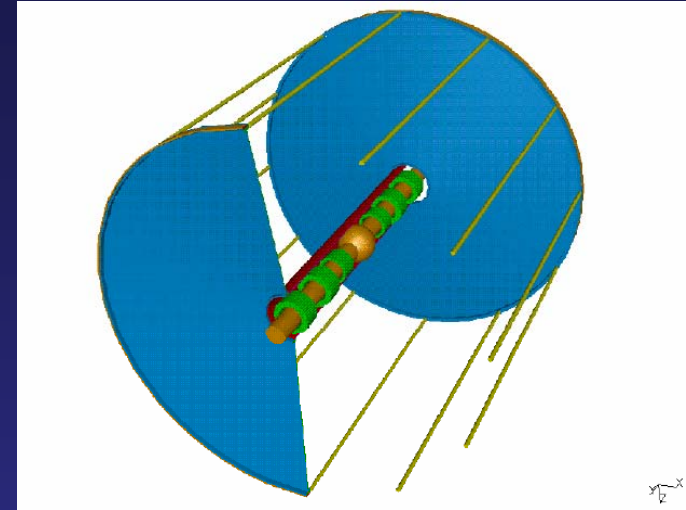
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ILC Tracking Technologies

- Drift Chamber with Cluster Counting (CluCou)
- Time Projection Chamber (LCTPC)
- Silicon Strip Tracking
 - As additional tracking with TPC (SiLC)
 - Silicon tracking only (SiD)

- ILC Parameters
 - Magnetic fields up to 5 Tesla
 - Power pulsing and material budget
 - 5Hz beam structure

- This presentation will be brief
 - Will not cover the technologies
 - Will not cover details of what drives the test beam needs
 - Will not cover what the groups will test

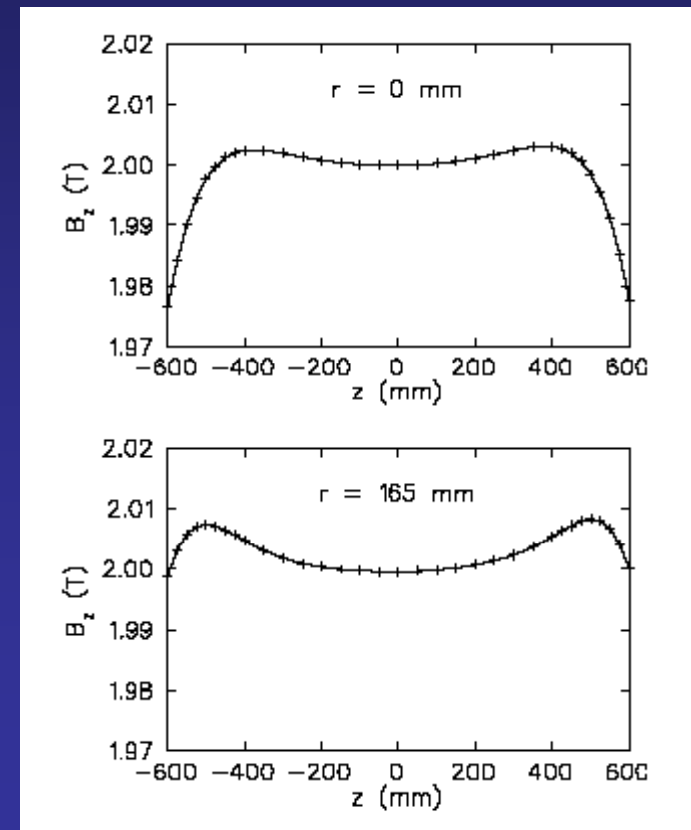
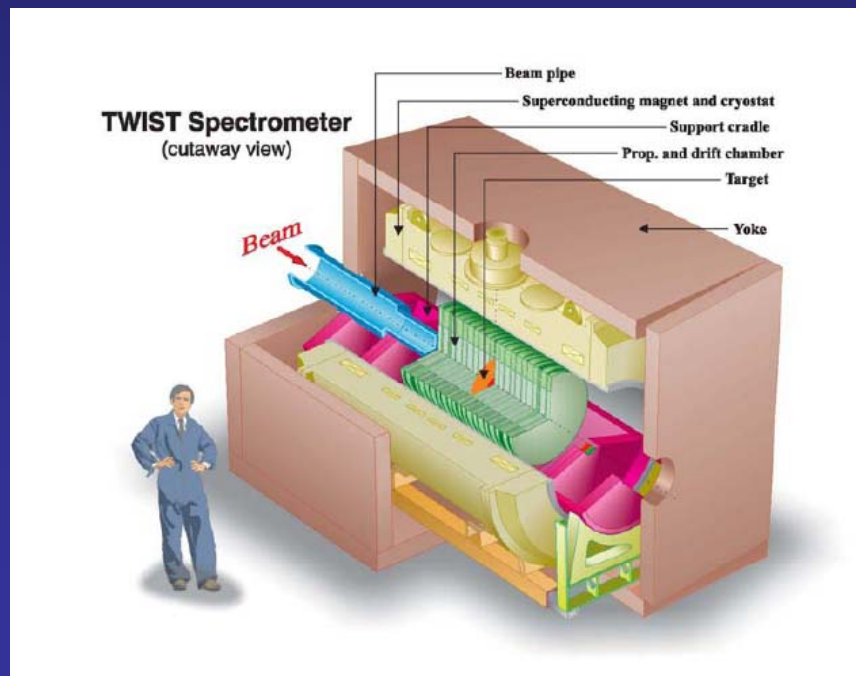


Beam Requirements

- Beam particles
 - Electrons, protons and pions in large momentum range preferred
- Beam diagnostics
 - Good particle id over full momentum range
 - Particle beam telescope
 - Both exists already at most facilities
- Beam structure
 - 5Hz beam structure desired for intrinsic chamber studies
 - 5Hz beam structure required for power pulsing and anticipated associated Lorentz forces; the latter requires large magnetic field
- TPC
 - Currently testing small prototypes
 - Clear need for large aperture facility when testing Large Prototype (LP) TPC
- Silicon
 - Most studies can be carried out with small scale, small bore, high field magnet
 - Possibly need for larger scale test facility in the long term

Infrastructure Requirements

- Existing infrastructure requirements all more or less adequate
- What is needed most is a high field, large bore magnet !
 - Two existing magnets (becoming) available
 - AMY magnet field of 3 Tesla
 - Inner diameter of the cryostat: 2.2m
 - TRIUMF magnet field of 2T
 - Inner diameter: 1m
 - Length: 223cm



Test Beam Road Map Document

- A document with the requirements for beam tests is being drafted
- Everyone is invited to comment on the document and make it as complete as possible so that the various facilities can prepare to accommodate the needs of the groups