

Plans for the CEPC-CDR

-TPC tracker

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- Based on the pre-CDR contents
- Based on the LCTPC R&D significant activities
 - More sub-sections should be included and modified
 - More details simulation and R&D for circular machine should be added

<p>6 The CEPC Detector</p> <p>6.1 Detector Overview</p> <p>6.4 Main Tracking Detector – TPC</p> <p>Baseline design 6.4.1 Design and Challenges</p> <p>6.4.2 Alignment and Calibration</p> <p>Further R&D 6.4.3 Critical R&D</p> <p>Cost estimation</p>	<p>Simulation and Estimation</p> <ul style="list-style-type: none"> - Higgs run - Z-pole run - Occupancy - Distortion - Something could do - Something could not do <p>Current R&D</p> <p>Mechanics and integration</p> <ul style="list-style-type: none"> - MDI integration 	<p>145</p> <p>145</p> <p>148</p> <p>148</p> <p>148</p> <p>149</p> <p>150</p>
<p>Alignment and calibration</p> <ul style="list-style-type: none"> - Field map in the magnetic - Alignment used laser - Distortion correction - Gas/HV/Readout - Software/correction methods 	<p>(For any module and any track reconstruction)</p>	

- **Timescale for the work?**
 - One year (like to pre-CDR)
 - More time (Included the MOST R&D)
- **Tracker system interface**
 - MDI
 - Tracker system integration
- **List of resources in tracker R&D**
 - Circular and linear collider (critical challenges)
 - IBF for distortion (Who is doing what)
 - Alignment and calibration of tracker (How to do? Method?)
- **Challenges or possible limitations/consideration**
 - Requirement of CDR (Detector design simulation /version?)
 - Something could be do and NOT do? (estimation)
 - Common tracker consideration (alignment and calibration. Method?)
 - Man power
 - focusing in the critical challenges @IHEP,THU,MPGD
 - LCTPC R&D in the tracker reconstruction @global effort

- Simulation and estimation
 - Z-pole run for CEPC R&D (prepared one NOTE)
 - Tracker alignment and calibration (~100um resolution)
 - Hybrid detector module concept

- Experiment and module R&D
 - Continuous Ion Back Flow detector module (GEM+MM)
 - IBF could reach to ~0.1%
 - Stable long time operation **MOST funding/IHEP+THU**
 - Maintaining the electron transmittance
 - Plan to design and study in 1.0T magnetic (In LCTPC collaboration) /1~2years
 - Prototype with laser system
 - Laser system with 266nm
 - Drift velocity
 - Electric field in fieldcage **Key NSFC funding/IHEP+THU**
 - Waveform sampling electronics
 - Plan to assemble and test/~1 year