Status of MDI Part of Ref-TDR of CEPC Detector

2024

2024.5.28

Status – Beam Induced Backgrounds

- Current Status towards Second Version(Based on CEPCSW):
  - Input file(from generator or tracking tool) converted to ROOT format
  - Get Hit distribution and Dose distribution at same time
    - Hit in ROOT file, could be processed directly by detector designers and/or MDI group
    - Dose in TXT file currently, will be processed by MDI group
  - Very time consuming, 10min/particle with full detector
  - Almost ready to proceed mass production, however still have some small difficulties

Status – Beam Induced Backgrounds

- Current Status towards Second Version(Based on CEPCSW):

Background	Mode	Generation	Tracking	Noise Estimation	Rad. Da. Esti.	Rad. Env. Esti.
Synchrotron Radiation	Higgs	To do	To do	To do	To do	To do
	Z	To do	To do	To do	To do	To do
Beamstrahlung/Pair Production	Higgs	Done	-	Mass Checking	To do	To do
	Z	Done	-	To do	To do	To do
Beam-Thermal Photon	Higgs	Done	Done w.o. Sol	To do	To do	To do
	Z	Done	Done w.o. Sol	To do	To do	To do
Beam-Gas Bremsstrahlung	Higgs	Done	Done w.o. Sol	Mass Production	Mass Checking	Mass Checking
	Z	Done	Done w.o. Sol	To do	To do	To do
Beam-Gas Coulomb	Higgs	Done	Done w.o. Sol	To do	To do	To do
	Z	Done	Done w.o. Sol	To do	To do	To do
Radiative Bhabha	Higgs	Done	-	To do	To do	To do
	Z	Doing	-	To do	To do	To do
Touschek	Higgs	Doing	To do	To do	To do	To do
	Z	Done	Done w.o. Sol	To do	To do	To do

Status – LumiCal

- Regular Meeting: Tuesday afternoon.
- The design of Ref-TDR LumiCal are finishing as presented yesterday. A few details needed to be updated:
  - The full simulation based on CEPCSW.
  - Mechanical Design and Integration.
  - The methods of Survey.
  - Benchmark(Beam Test) of Geant4 Simulation.
  - Backgrounds estimation/affects on other detectors.

Status – Overall design/optimization of IR

- A regular meeting with acc. People will be held at Thursday morning, minutes Link: CEPC MDI Meeting - HedgeDoc (ihep.ac.cn)
- The work on component design optimization is on going:
  - The Re-design of Cryo-Module has been started.
- The overall distribution of magnet field will be presented after the design of the solenoid and also the re-design of the anti-solenoid.
  - The magnetic field of the Solenoid has been presented.
  - The re-design of the anti-solenoid has been started.
  - The joint effort will begin when the anti-solenoid design finished.
- Hope to finish a preliminary stable version before the End of August