

2025.8.26



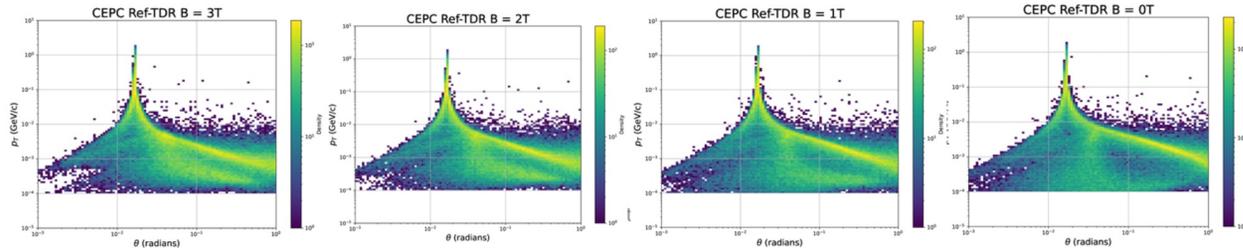
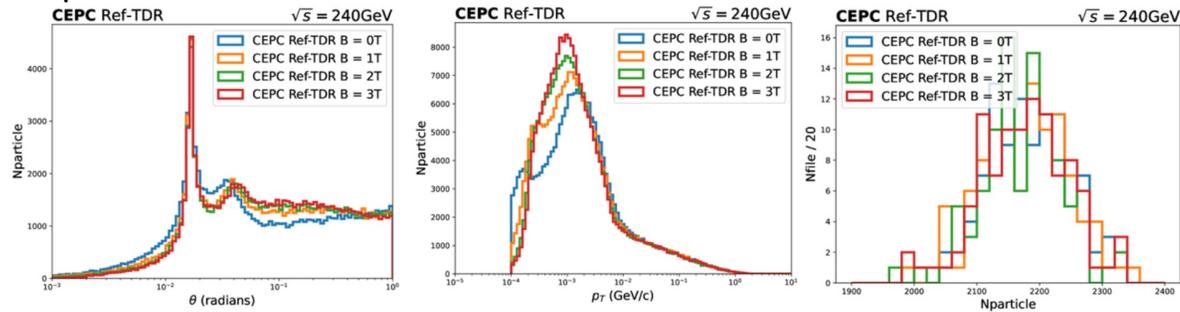
Check on Pair Production by Physics Group



Chenguang Zhang, Xiaotian Ma

Pair production check

Check differences in different B values
Magnetic field affects particle distributions



A setting error on angle has been fixed.



Status



- The updates on feedback to IDRC Review is ongoing.
 - New draft version, discussed with Prof. Lou and Prof. Jin last week.
- The updates on BG simulation is on going.
 - SR: Finished the coding of the new generator with re-weighting. Test on progress. We set ~ 50 steps in simulation. May not be finished before Review.
 - Single Beam loss: New lattice with Solenoid(No Beam-beam) has been tested. Generation and accelerator tracking on going.
 - Accelerator Tracking finished last week for BTH/BGB/TSC, BGC is still simulating. Adjustment of the collimator is ongoing based on IR lossmap.
 - Detector simulation will be started after acc-tracking finished.
 - Pair Production: Physics group did a lot of check. We see less hits on VTX with B field(uniform). ($\sim 5.1 \rightarrow 1.2$ MHz /cm²).
 - Non-uniform B field in detector simulation: The B field can be loaded successfully(thanks to the Software and Magnet colleagues). Simulation on going, can be done before the review.



Main issues can be done before review



- SR: Generation in CEPCSW, with Non-uniform B field. Detector Simulation with old methods(Rare SR photons exiting the Be pipe, detector simulation using these samples) at Higgs mode.
 - New generator with re-weighting can not be done before review.
- Pair Production: Detector Simulation with Non-uniform B field, finished.
- Single beam loss particles: Detector Simulation with Non-uniform B field.
- Samples for mixing: pair production and single beam loss particles can be prepared.