

Sim. chapter plots & tables

Matthew, Noam

Aug 18 2020

WEIZMANN
INSTITUTE
OF SCIENCE



Intro

- ◉ Present results just before the detector planes, decoupled from the specific technologies
- ◉ cannot be completely decoupled from the physical detectors setup, for both signal and background, since the exact implementation of the G4 model has to assume something and as we've seen, there's some background generated due to the materials of the detectors themselves.
- ◉ Nevertheless, this can be probably treated “generically”, i.e. it will appear no matter what we use as detectors.
- ◉ Performance plots should be discussed in the detectors chapter based on fast simulation.

Plots

- energy and momentum (px,py) spectra
 - separately for the positrons, electrons and photons
 - overlaying background and signal
 - including the signal “variation runs” as an uncertainty band?
 - separately for the nominal configurations of phase-0 and phase-1
 - similarly but overlaying the other configurations (beam energy, spot size, etc) together in the appendix?
- x:y particle occupancies in bins chosen to be roughly similar to the expected detector granularity for background and signal
 - tracker: $100 \times 100 \text{ } \mu\text{m}^2$
 - Cherenkov: $1 \times 1 \text{ mm}^2$
 - calorimeter: $0.5 \times 0.5 \text{ cm}^2$
 - fwd spectrometer: $0.5 \times 0.5 \text{ mm}^2$
 - profiler?
 - backscattering calo?
- x:y particle occupancy (no matter the binning) at the dipole exit plane
- particle multiplicities for background and signal
- event displays?
- total rates vs ξ with background subtracted and with systematic uncertainties due to signal variations (which ξ , peak or average?)
- for the e+laser setup only: de-convoluted photon spectrum from positrons and electrons (the edges plot)

Tables

- total rates at the different locations (rows) for the different configurations (columns) with uncertainties
 - for background and signal and background side-by side in the same table?
- maximum particle densities (e.g. per 0.1×0.1 mm² as a compromise between the different granularities) for the different locations?