DetectionSlicer

Conversion of Energy Depositions in LAr in PE Detections

Goal: convert Edep to NPE

Workflow:

Optical Map: convert Edep to PE detected based on the deposit coordinates.

Hit-Space Distribution: spread PE detected over the fibers shroud.

Output Format (1)

The output file contains:

- fTree: flat Ttree with step-level information, *see next slide*
- NInnerSlices: number of X-Y slices of the Inner Shroud
- NOuterSlices: number of X-Y slices of the Outer Shroud

The output filename includes the parameters

e.g.: SlicedDetections9870294_Slices12_20_Yield40_QuantumEff0.400000_Seed123456789

- SlicedDetections: prefix
- 9870294: suffix of the original input file (e.g. output9870294.root)
- Slices12_20: number of inner, outer slices
- Yield40: number of OP per KeV
- QuantumEff0.400000: quantum efficiency
- Seed123456789: seed used to inizialize the TRandom generator

Output Format (2)

fTree format:

- eventnumber: event identifier (from simulation file)
- time: time in ns from the begin (from simulation file)
- x, y, z: coordinates in mm (from simulation file)
- material: name of the material (from simulation file)
- energydeposition: energy deposited in KeV (from simulation file)
- pedetected: number of photons detected by SiPM
- detectionefficiency: detection efficiency (from Optical Map)
- quantumefficiency: constant quantum efficiency
- InnerSlice0, …, InnerSliceN: number of photons detected by each slice of the inner shroud
- OuterSlice0, …, OuterSliceM: number of photons detected by each slice of the outer shroud