SAND Calibration WG

P.Gauzzi

(Universita' La Sapienza e INFN – Roma)

June 7, 2024

Scope of Calibration WG

- Calibration: from detector signals to physical variables
  - ECAL: energy, time and positions of the particles
  - STT: *r-t* relations, track momentum, dE/dx for PID, ...
  - GRAIN: tracks, time, energy, ...
  - Timing alignment among the subdetectors (for the determination of the interaction time)
- Start to define a strategy for each subdetector:
  - Sources: cosmics, particles from beam, (radioactive sources ?)
  - Choose suitable processes (given the expected fluxes of particles in the detector) (*e.g.* for the ECAL: cosmic μ's as MIPs, MIPs from the beam, electrons and photons ....)
  - Set a calibration procedure (at which level of precision ? How much time expected for a calibration ?)
- Reference people:
  - ECAL: P.Gauzzi
  - GRAIN: A.Surdo
  - STT: ……

SAND Calibration WG

ECAL calibration:

- **MIPs from cosmic rays + MIPs from beam (rock, magnet and Fe yoke, upstream ECAL modules) for cell-by-cell calibration of both energy and time**
- **γ's from π^0 decays and electrons from beam events to set the energy scale and timing performance**
- **MC studies planned**

GRAIN calibration:

- **Photoelectron peak alignment of SiPMs**
- **Global T_0 determination**
- **Time synchronization**
- **Energy deposit evaluation: calorimetric and track-by-track**
- **Vertex and tracks determination**
- **MIPs + Particles from beam events: muon decay electrons, stopping muons, π^0's**
- **Several reconstruction algorithms under development**

STT calibration: strategy not yet defined

Questions from last meeting

- **ECAL:**
  Is there any temperature dependence of the KLOE calibration constants ?

- **GRAIN: Do we really need a radioactive source for calibration ?**