Digitization Discussion Overview

❑ Started discussion on how to handle MPGD signal formation in ePIC simulation

❑ Initial meeting with Markus (from S&C) to discuss epic MPGD digitization (8/26): Indico

  ▪ Put us in touch with G4/simulation expert Makoto

❑ First discussion with Makoto last Friday (9/6): Minutes

GEANT4 Simulation Discussion Summary

❑ **Meeting takeaway:**

1. Avoid simulating full amplification and digitization chain (ala ATLAS)

2. Use GEANT4 to simulate particle energy deposition in gas

3. Correlate energy deposition to parameterized measurements to achieve realistic performance: spatial resolution, efficiency, timing resolution, strip multiplicity...

❑ **Suggestions to improve GEANT4 simulation:**

1. Use G4 EM option #4 (physics lists)

2. Limit G4 step size, e.g. ~ 1/10 gap size, to allow multiple depositions per trajectory

3. Set production threshold ~ 10 μm

4. For low energy ($\sim 10 \ eV < E < 15 \ MeV$) PenG4 can be used with G4

GEANT4 Simulation Discussion Summary

❑ Tasks Summary

➢ Improve G4 energy deposition simulation

➢ Parameterize data

▪ What data do we want to parameterize for different sub detectors?

➢ Correlate G4 sim results to parameterized data

▪ Best way to correlate G4 sim to parametrized data?

❑ No tasks have people associated with them