TDR Studies

❑ Determine the MPGD spatial resolution required to meet tracking performance

  ▪ Vary spatial resolution in background embedded environment and assess track reconstruction efficiency

  ▪ Vary spatial resolution and assess impact on angular resolution entering PID detectors

❑ Assess impact of fast timing information

  ▪ Check fast timing layers have hits in the fast-timing layers

  ▪ Are fast timing hits in different layers consistent

  ▪ Match seeded tracks to fast timing layer hits

❑ Assess BIC impact on tracking, in particular angular resolutions going into PID detector

  ▪ Compare angular resolutions determined with and without BIC in track reconstruction

❑ Redundancy study for when different tracking layers or regions fail

  ▪ Disable different regions and assess tracking performance

❑ Study misalignment impact on tracking performance

❑ Track Reconstruction performance, e.g. Reconstruction efficiency, number of fake and duplicate tracks

Framework/Software Needs

❑ Implementations

- BIC detector into ACTS

- Accommodate disks with off-center holes into ACTS

❑ Algorithm/Code Development

- Ambiguity Solver for multi track reconstruction

- Validation of track covariance matrix (Recent update: Jeetendra, Beatrice)

- Track finding in backgrounds (Recent update: Benjamen)

- Vertex reconstruction (Recent update: Sooraj)

- Track-to-calorimeter matching

  ➢ For example, backward EM calorimeter could help with performance