

Non-homogenous Field Study Status

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- TPC simulation completely in MarlinTPC
 - **/simulation/TPCCloudSimulation**
 - **Not in trunk yet**
- Processors
 - **PrimaryIonisationProcessor**
 - **ElectronCloudDrifterProcessor**
 - **ElectronCloudGEMAmplificationProcessor**
 - **ElectronCloudChargeDepositProcessor**
 - **SignalShaperGaussianProcessor**
 - **SignalCombinerProcessor**
 - **SignalDigitiserProcessor**



Reconstruction / Results

- Standard reconstruction chain
- Uses the TrackFitterLikelihoodProcessor
 - **Now compensates for non-homogenous fields (hopefully – testing in progress)**
 - Can turn on/off with processor parameter
- Results
 - **Simulated ~500 pi- (single tracks – no curlers/noise) with homogenous field and found reconstructed momentum resolution acceptable**
 - $\sigma(1/p_T) \sim 1.37 \times 10^{-4} (\text{GeV}/c)^{-1}$
 - **100% reconstruction rate with above events**

- Some simulation problems
 - **Too many energy deposits creates too many electron clouds & crashes program**
- Add support in simulation / reconstruction for multiple readout modules
- More LikelihoodFitter testing
- More simulation cases
- Photoelectric system?