Software status and plans

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DigiSim

- Goal: a program to parametrically simulate the signal propagation and digitization processes for the ILC detector simulation

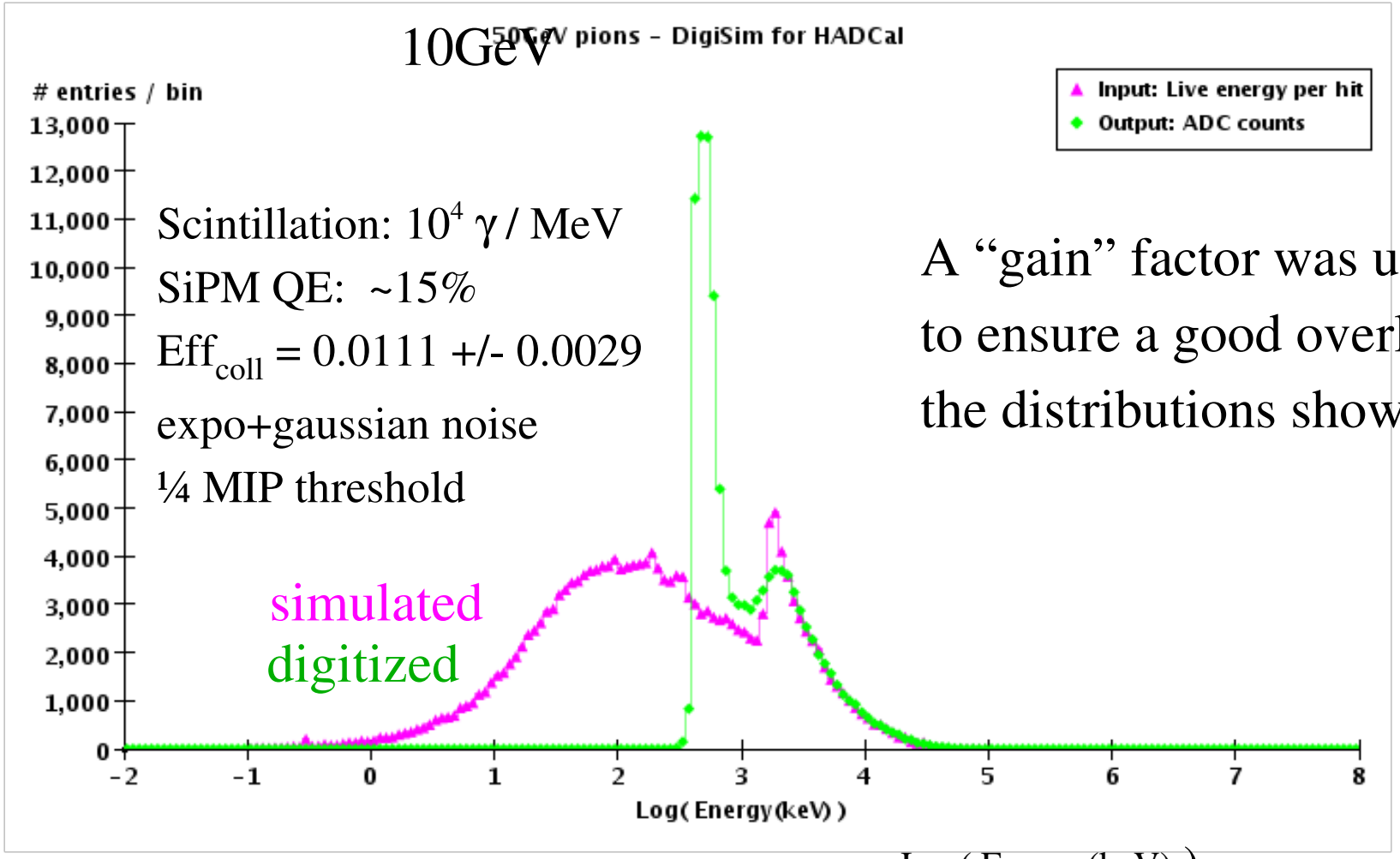
  ☞ an essential tool for comparing different detector technologies

- DigiSim role is to convert the simulated data (energy depositions and hit timings) into the same format AND *as close as possible* to real data from readout channels, while preserving all MC information from input data files

  - *As close as possible* means that all known effects from digitization process should be taken into account, if possible: cell ganging, inefficiencies, noise, crosstalks, hot and dead channels, non-linearities, attenuation, etc.

- Same reco / analysis software can be used for MC and real data.
  This means that non-MC calls to SimCalorimeterHits (energy, position) can be transparently replaced with calls to the CalorimeterHit interface.
  For MC-related values, use (same) cellid as a key to access SimCalorimeterHits.

HCal scintillator digitization (preliminary)



A "gain" factor was used to ensure a good overlap of the distributions shown.

Log(Energy(keV))

DigiSim status

- Latest Java and C++ versions released since August
  - All SiD scintillator-based HCal barrels have a preliminary steering file implemented. Extension to Scint-based endcaps is straightforward.
  - Identities in most other components, for easy startup.
  - I would be happy to help other people to implement digitization descriptions for other components (trackers?), and also to used digitized hits in their reco algorithms
  - C++ version lacks interface to geometry system: no crosstalk or noise simulation

PFA developments

- Directed Tree (digital) clustering algorithm implemented in org.lcsim
- Using sidaug05_tcmt geometry for development
- Adding other algorithms
  - Track matching: swimmer vs. stepper (under way)
  - Longitudinal calibration (to be checked in org.lcsim)
  - To do: photon ID, fragment analysis, tail catcher, DigiSim

Summary

- DigiSim is in stable state. It would be nice to have RPC and ECal steering files available for tests (even in preliminary state)
- Directed tree clustering algorithm available in org.lcsim
- Most PFA tools are ready, focusing on combining them into a full PFA algorithm.