Thoughts on a new CRT event reconstruction

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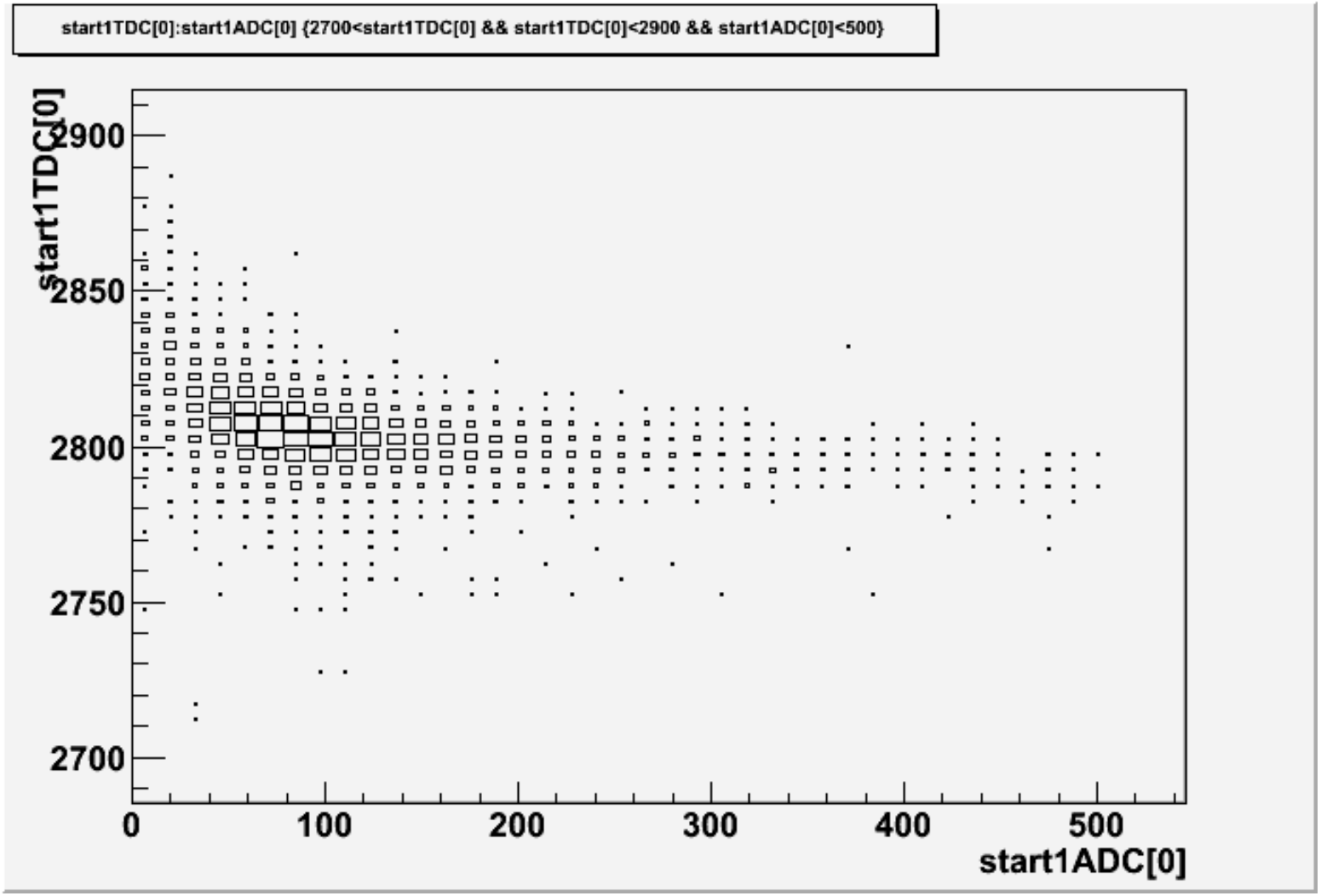
Just started... so mainly a seed for discussion

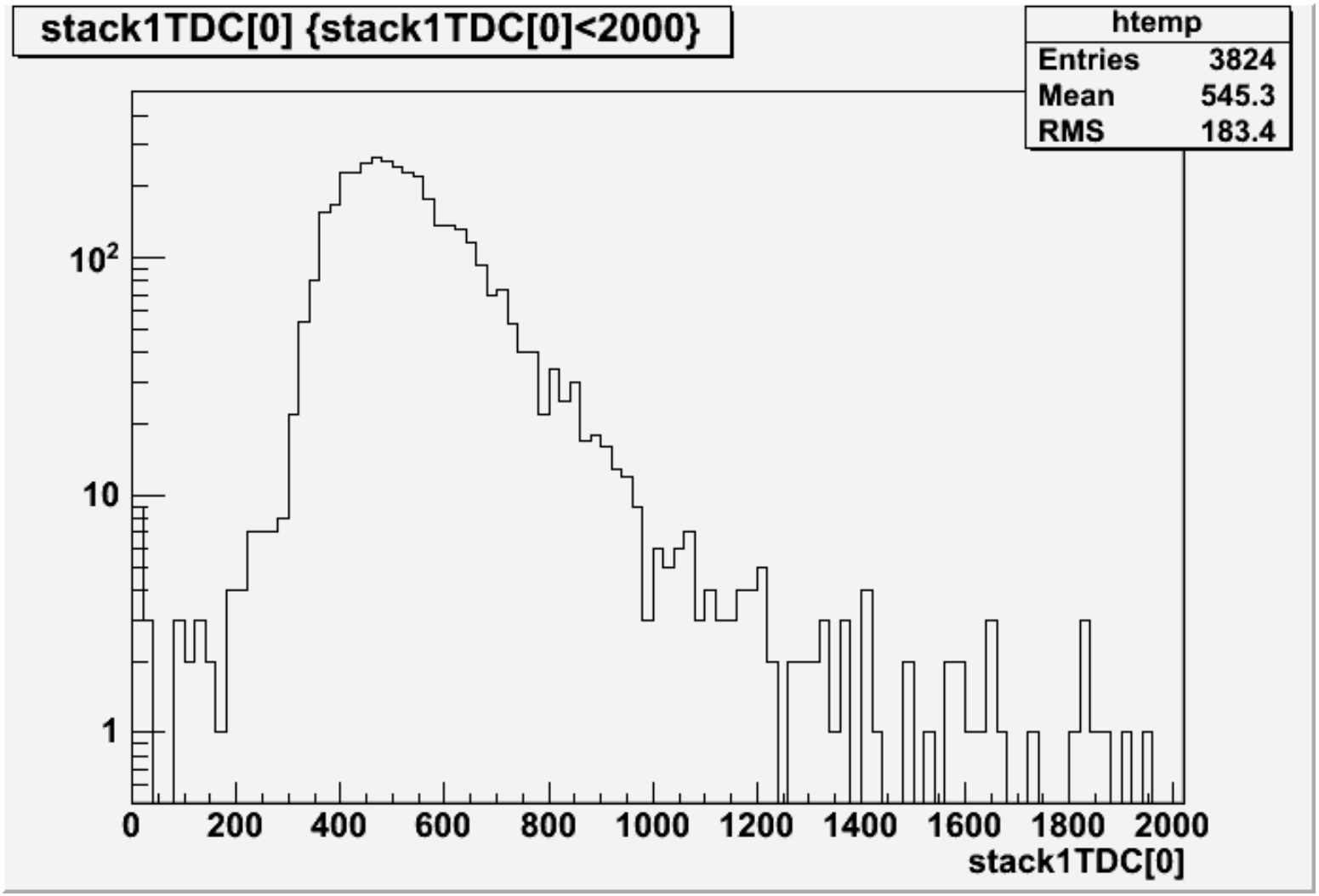
- Existing Fortran code from Jerry
  - “grown by adding pieces together” (in Jerry's words)
- Data in asci format (dst2)
- Inputs from G4 simulation: a set of tables for the direction cosines and top of the photon as a function of the pixel hit
- “Tracking” taken originally from a bubble chamber software (different coordinate system, no “geometry” definition for the hodoscope, hard coded formulas)

- Read data into root format
  - Compressed x10
- Define a flat event
  - dst2event
  - Has the same information as the flat file
    - But has names for each variable
  - Fill a reconstructed event
    - Physical quantities
    - Reconstructed quantities (tracks)
  - Can draw quantities from root file

Start time vs ADC



Stack time


stack1TDC[0] {stack1TDC[0]<2000}
htemp
Entries 3824
Mean 545.3
RMS 183.4
10²
10
1
0 200 400 600 800 1000 1200 1400 1600 1800 2000
stack1TDC[0]

Tracking

- Re-write tracking part
  - Re-use fast-sim tracking code
    - It has the kalman fitter
    - It has geometry calsses to go from local to global coordinates
  - Use the Root geometry package
    - Easy to implement
    - Has an interface to Geant4, do we need it?
- Flexibilty to add misalignments, compute track resolution

Plan

- Need to understand a lot about the setup and the meaning of the variables
- Add the tracking
- Add the beta reconstruction
- ….
- ….