

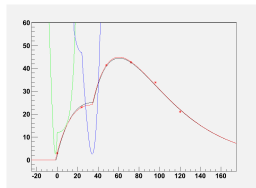
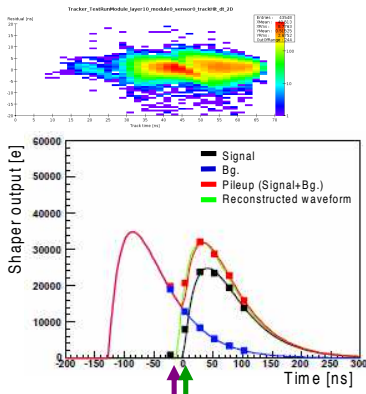
# slides for Pelle's tracking talk

Sho Uemura

SLAC

# Pulse shape fitting

- Current recon only fits single pulses, using ideal CR-RC pulse shape
- Need to use actual pulse shape in fit, otherwise we see time-dependent pull on fitted hit time
- Identify and fit pileup — background hits before the signal hit will pull the fitted hit time to the left
  - ▶ In hottest strips, mean time between hits  $\approx$  pulse width
  - ▶ Without this, need to weaken the time cut a lot — track finding 100x slower and track efficiency still only 80%
- Good progress made in toy MC ... in 2011 (Sho)
  - ▶ Finish it off, port to Java — 1 month?



# Track finding using hit time

- Current recon: reject all hits outside a time window (relative to reconstructed ECal hit time), then use a time-blind track finder
- Hit time resolution varies:
  - ▶ Depends on relative timing of t0 and SVT clock
  - ▶ Pileup causes some hits to have very poor time resolution
- Simple plan: use hit times and resolutions to calculate a  $\chi^2$  or likelihood for candidate tracks, feed into track finder
  - ▶ Fun plan: “histogram tracking” finds high-likelihood sets of hits without prior knowledge of t0
- 2 weeks?

