

Pattgen pattern bank

- **pattgen_raw_11L_50x64x144**
- Includes forward regions
- Produced from ~330M geant-simulated tracks
- Coverage:
 - 65% over full eta
 - 66% over BARREL_ONLY
- 8.5M patterns per full region

Central-eta enriched linearized pattern bank

- **patterns_raw_11L_50x64x144**
- Produced from 800M par(5) + 330M pattgen
 - Eta range -1.3 .. 1.3 (i.e. mostly central!)
- Before cutting single-track patterns:
 - Coverage for BARREL_ONLY = 94%
 - ~80M patterns per region
- After cutting single-track patterns:
 - Coverage for BARREL_ONLY = 91%
 - ~46M patterns per region
 - Of these, 2.5M are forward-region patterns

Location of new banks

- Good for high-efficiency BARREL_ONLY studies
- Compatible with old sectors & constants
- Change the numbers as follows: `reg{0..7}`, `sub{0..3}`

PATTERNS ARE LOCATED HERE:

globus-url-copy

gsiftp://uct3-

edge1.uchicago.edu/pnfs/uct3/data/users/antonk/ftkbanksV1213.012609/[patterns_raw_11L_50x64x144_4M_reg0_sub0.tar.bz2](#)

file:///`pwd`/file.tar.bz2

- If you don't have constants & sectors, you can get them:

CONSTANTS & SECTORS ARE LOCATED HERE:

globus-url-copy

gsiftp://uct3-

edge1.uchicago.edu/pnfs/uct3/data/users/antonk/ftkbanksV1213.012609/raw_11L_50x64x144_4M_reg0_sub0.tar.bz2

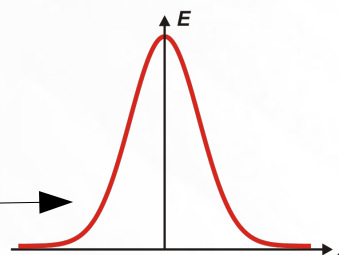
file:///`pwd`/file.tar.bz2

Brief summary of patt-from-const

$$P[14] = (d0, curv, phi, eta, z0, f1, f2 \dots f9)$$

$\underbrace{\hspace{15em}}_{5 \text{ track parameters}} \quad \underbrace{\hspace{15em}}_{9 \text{ constraints}} \quad \rightarrow$

$\chi^2 = f1^2 + \dots + f9^2$



$P[14] = M \cdot X[14] + C[14]$, where $M[14][14]$ and $C[14]$ are training constants

Inverting the equation, we get:

$X[14] = L \cdot P[14] + D[14]$, where L and D can be obtained from above eqn.

In patterns from constants, we:

- Generate P[14]: 5 track parameters of interest, and 9 rnd gaussians
- From 5 track parameters, choose sectors that are compatible
- For each compatible sector (aka set of constants $L[14][14]$ and $D[14]$):
 - Compute X[14] & check it's within module boundaries
 - Compute SS[14] and save a pattern

Patterns from constants bug

- There was a bad bug in CVS that only affected patterns from constant production in pattgen
 - Caused garbage instead of real patterns
- Details: wrong “extern C” linkage of C++ code
- Fix in CVS since last Friday