LCDG4 Status

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DHCal Meeting
June 09, 2004

News

- Datasets available for Argonne workshop include some V0s: Kshorts, sigmas and lambdas
- Optimization and memory debugging in LCDG4
  ~12% improvement in processing times
- Significant updates to non-projective fork
  SIO format now available. Goal is to have it merged with main codebase soon
- Non-projective geometry to be released in next version of hep.lcd software
- SLAC folks running LCDG4, they found a problem involving semileptonic W decays (daughters not simulated)

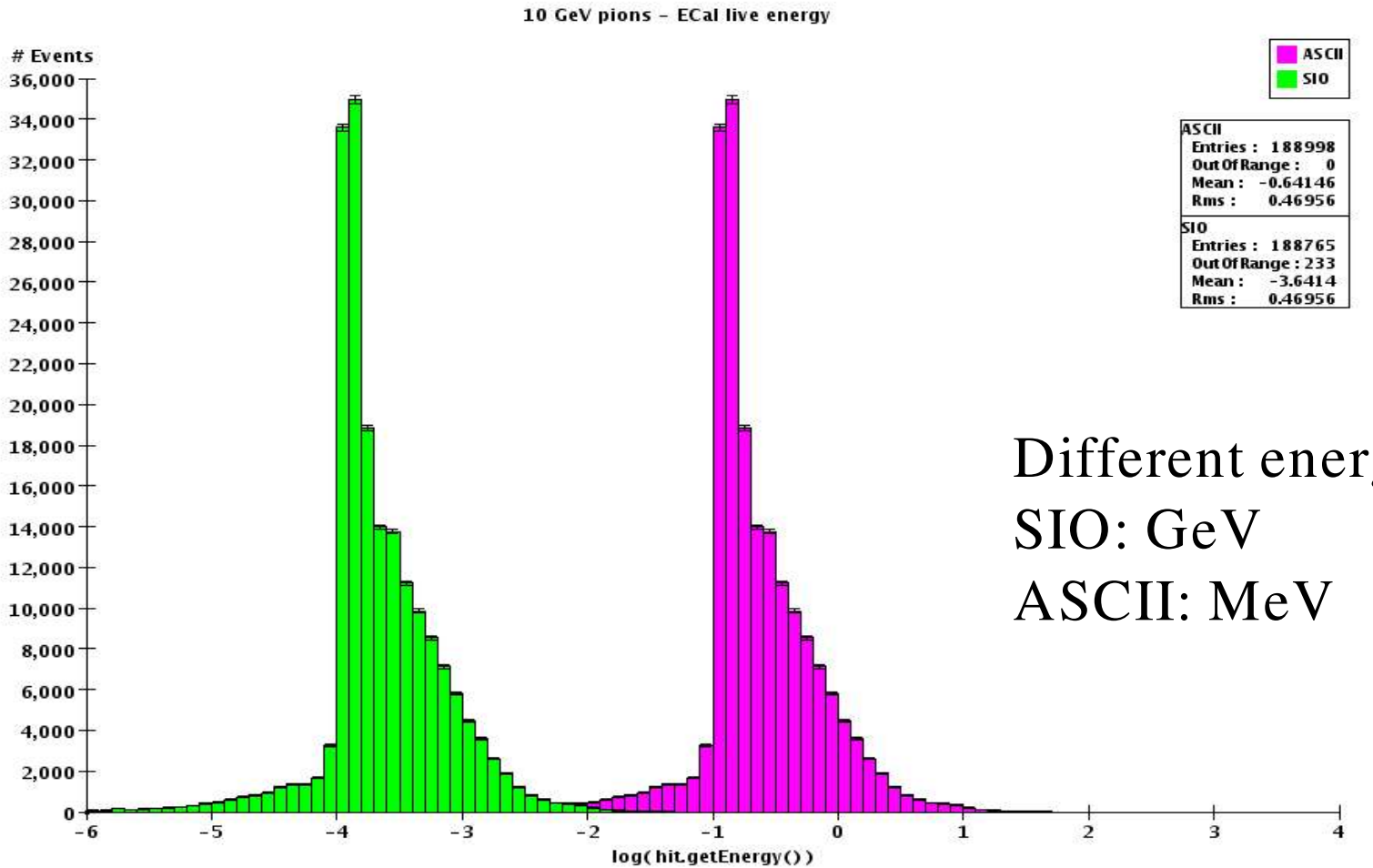
Non-projective SIO format

- Changes to identifier tags:
  LCD_Gismo_Event ⇒ LCD_LCDG4_Event
  LCD_Gismo_Record ⇒ LCD_LCDG4_Record

- Calorimeter hit format: Cell ids

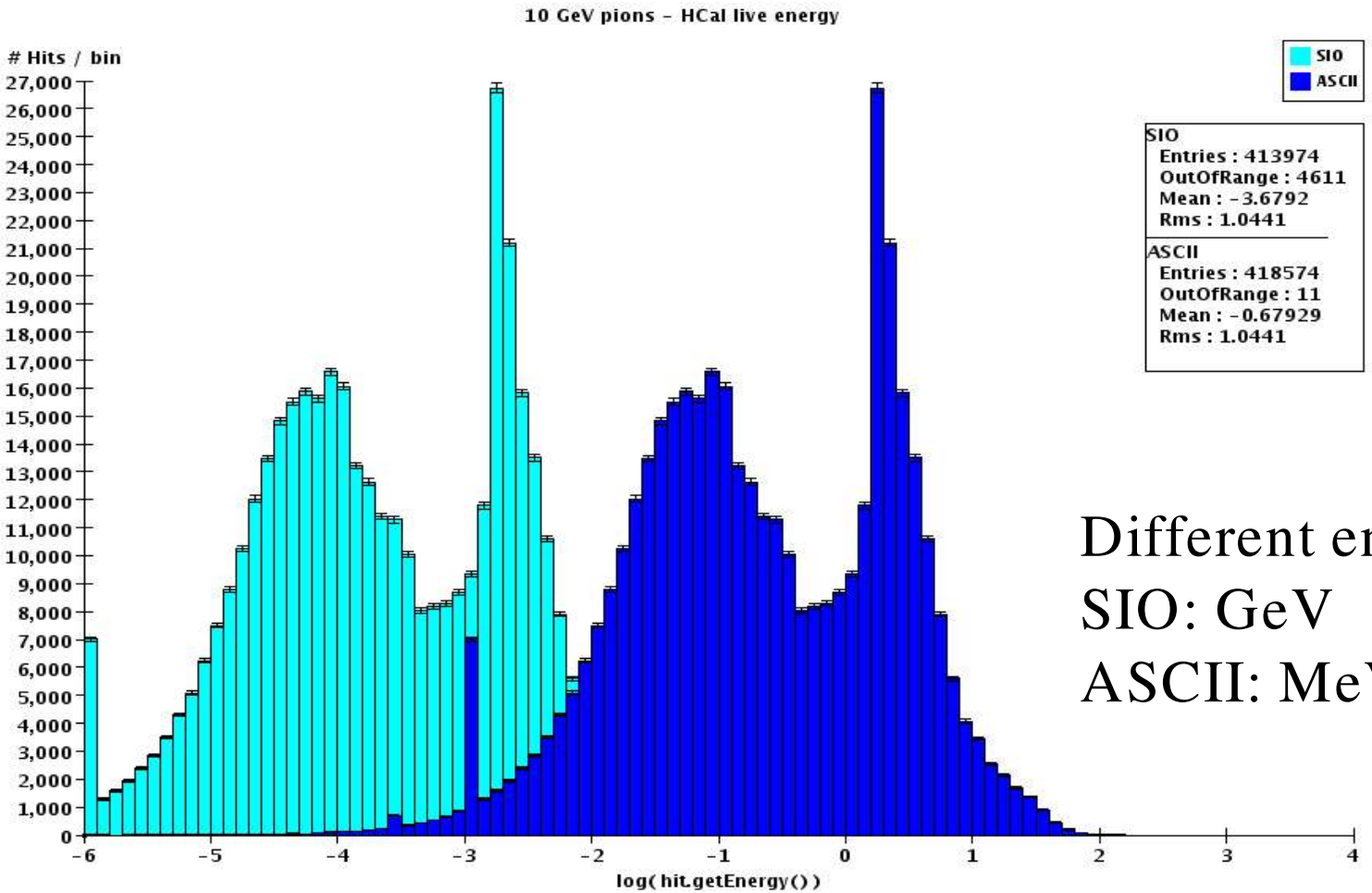
```
// Tag id bits:
// 12 bits for Phi (least significant), followed by
// 10 bits for Theta
//  6 bits for Layer, and
//  4 bits for system id (most significant bits)
// Total = 32 bits.
```

Certifying NonProj SIO format: ECal



Different energy units
SIO: GeV
ASCII: MeV

SIO vs. ASCII differences



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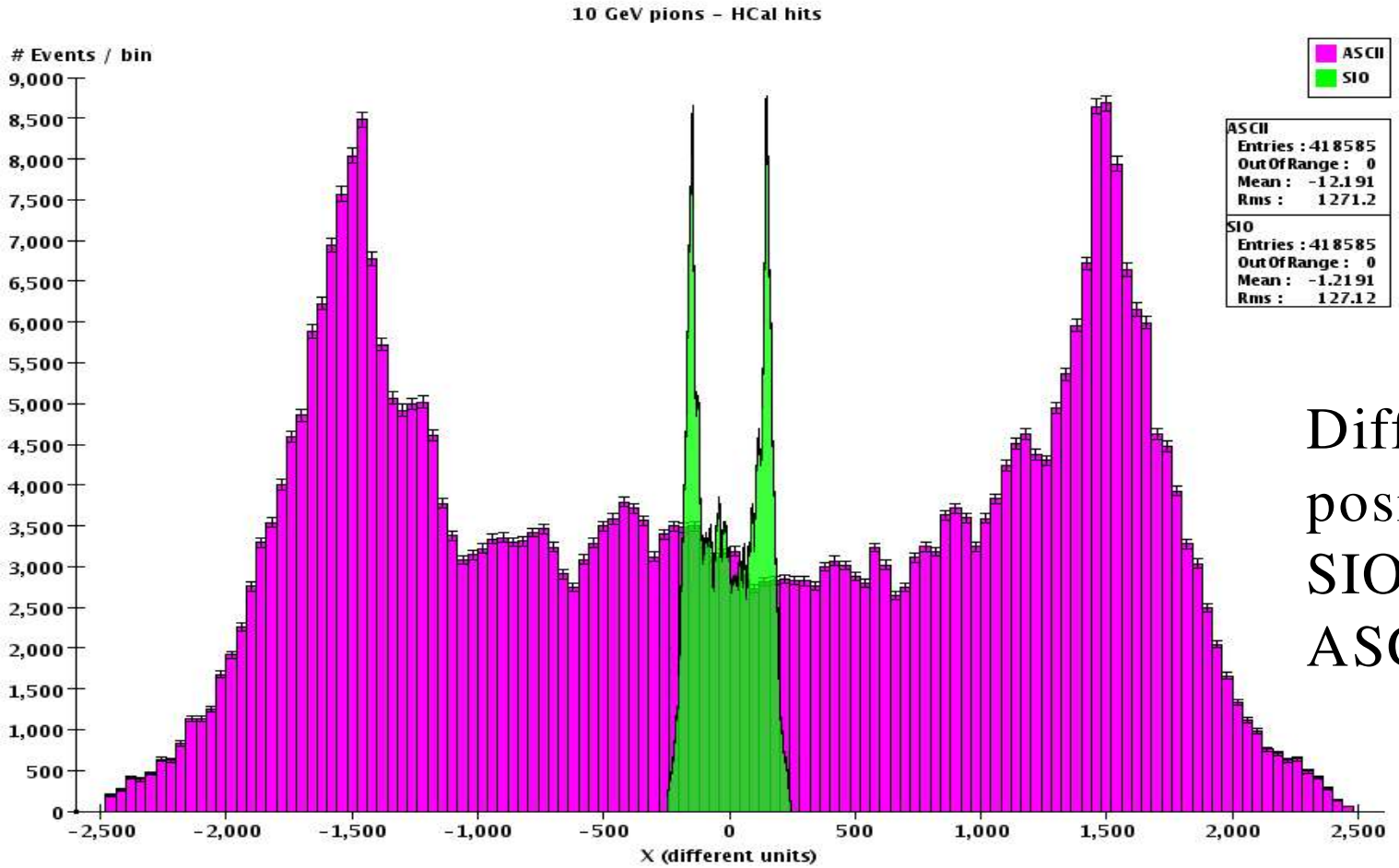
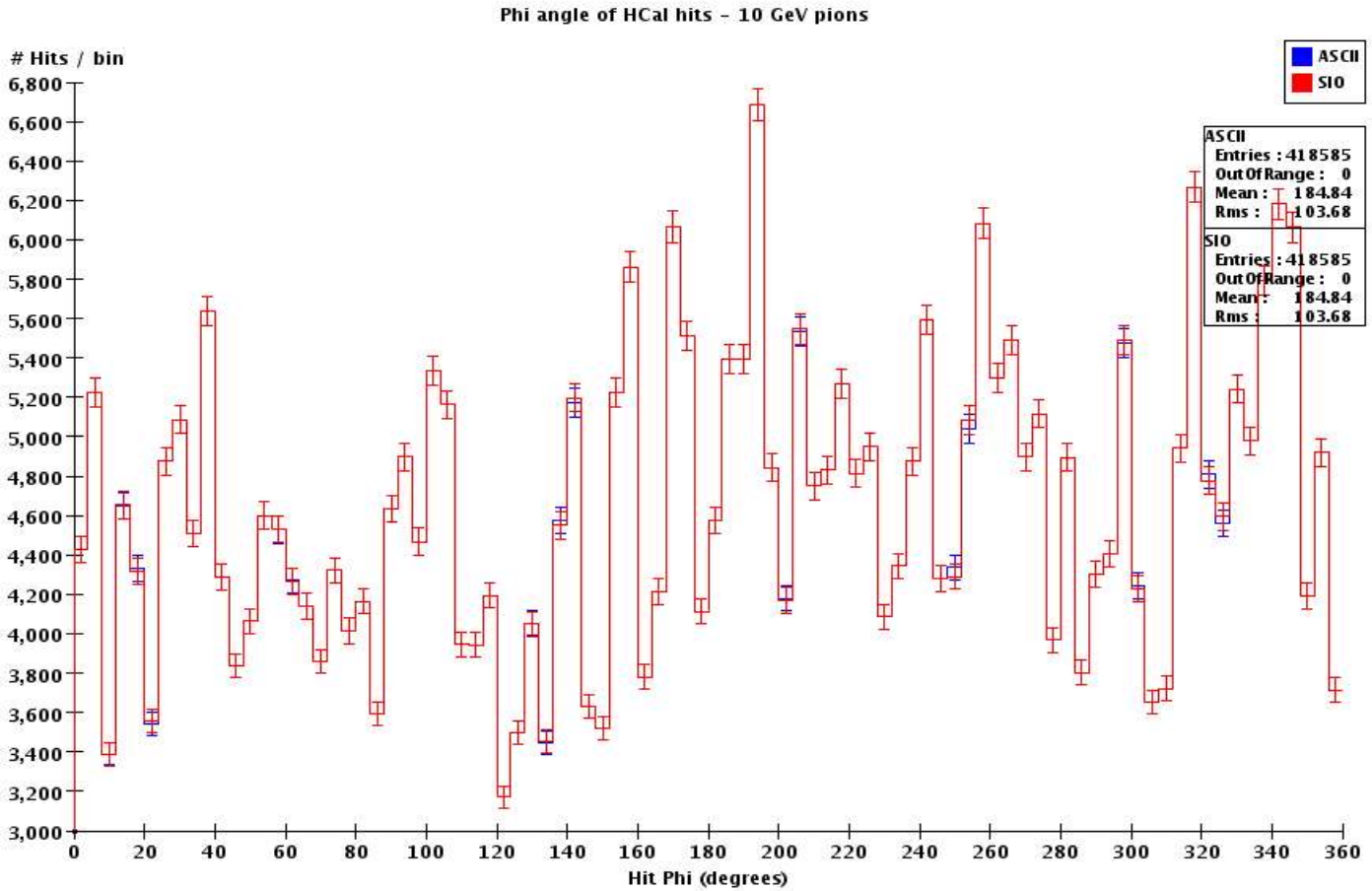


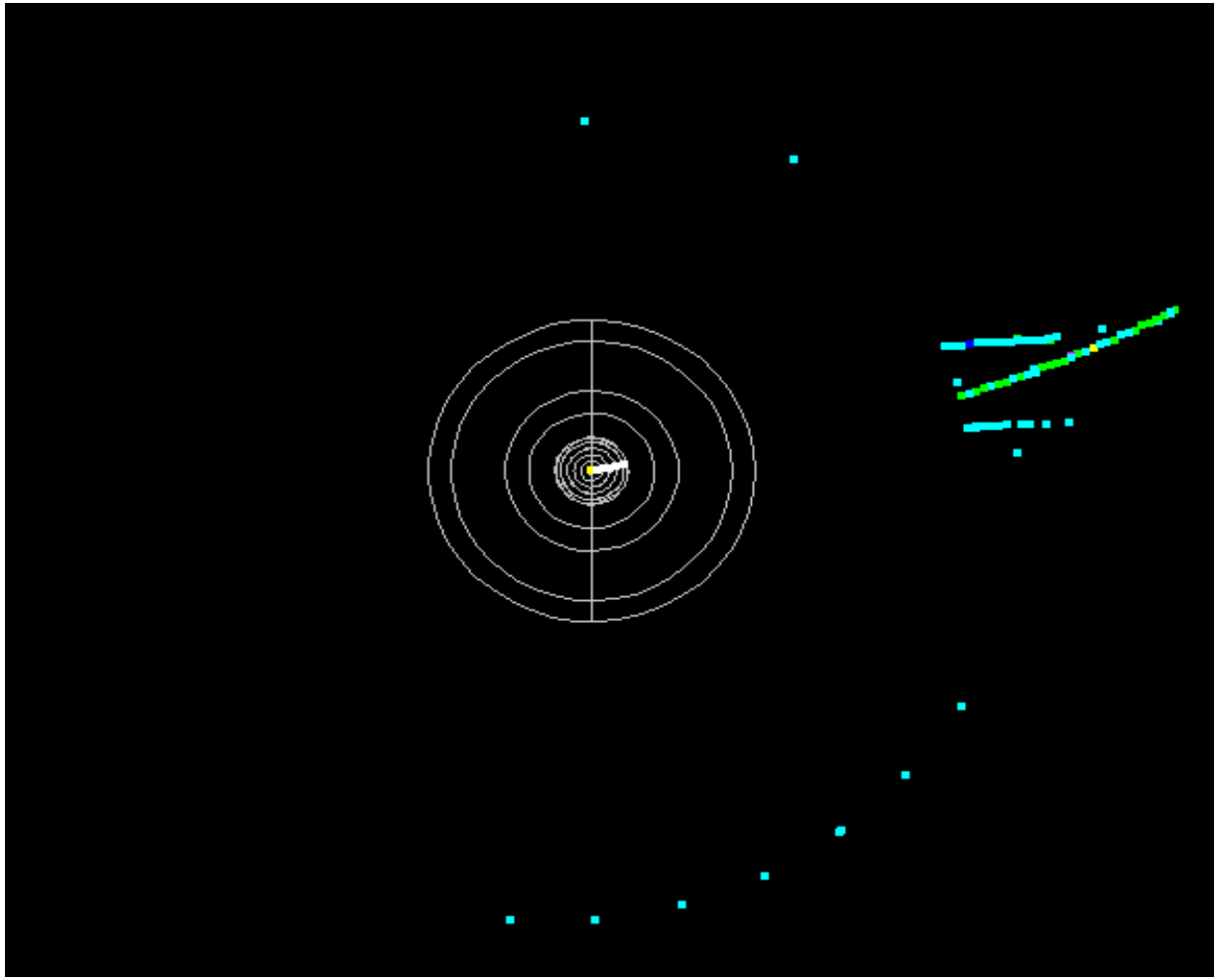
Different cell position units
SIO: cm
ASCII: mm

Rounding errors larger in ASCII



Visualizing non-projective geometry

Work under way...



Work under way

- Fix the “semileptonic W-decay” problem
- Finish NP SIO format certification
- Help SLAC people with NP release into hep.lcd software
- Improve LCDG4 documentation

What's next?

- LCIO format not in the plans for LCDG4
- LCS has lots of similarities, better designed code
- LCDG4 merge to LCS?
  - non-projective implementation
  - MC handling of preassigned decays (?)