

Comparisons of 4.11.1 and 4.9.1hpt1

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Outline

- What are compared
- What is different



What are compared

► Energy deposited in Calorimeters

- ▶ Electrons with 10, 20, 57 and 120 GeV energy
- ▶ Pions with 10, 20, 57 and 120 GeV energy
- ▶ Low energy pions

► CES related quantities for electrons



What is different

Generated web-pages, available from:

http://helios.physics.utoronto.ca/~shabnaz/sim_val/4.11.1/RegAna_e

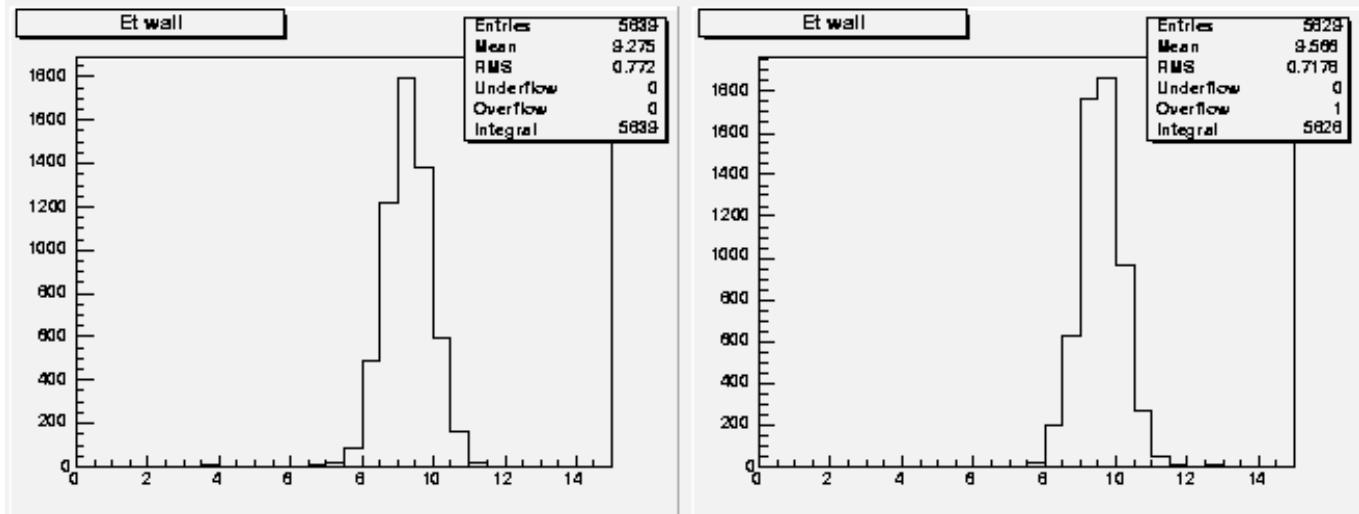
electrons:

- ▶ The Et in plug region is consistently lower by about %(1-3)
 - ▶ The EM energy distributions in tower (40,03) is shifted towards lower energies by about %(1-3.5)
 - ▶ E-best wire/strip cluster are higher by about %3 at some energies
 - ▶ had/Em in plug region are lower, for 120 GeV electrons by about %14
 - ▶ χ^2 for CES are higher on average by about %3
-

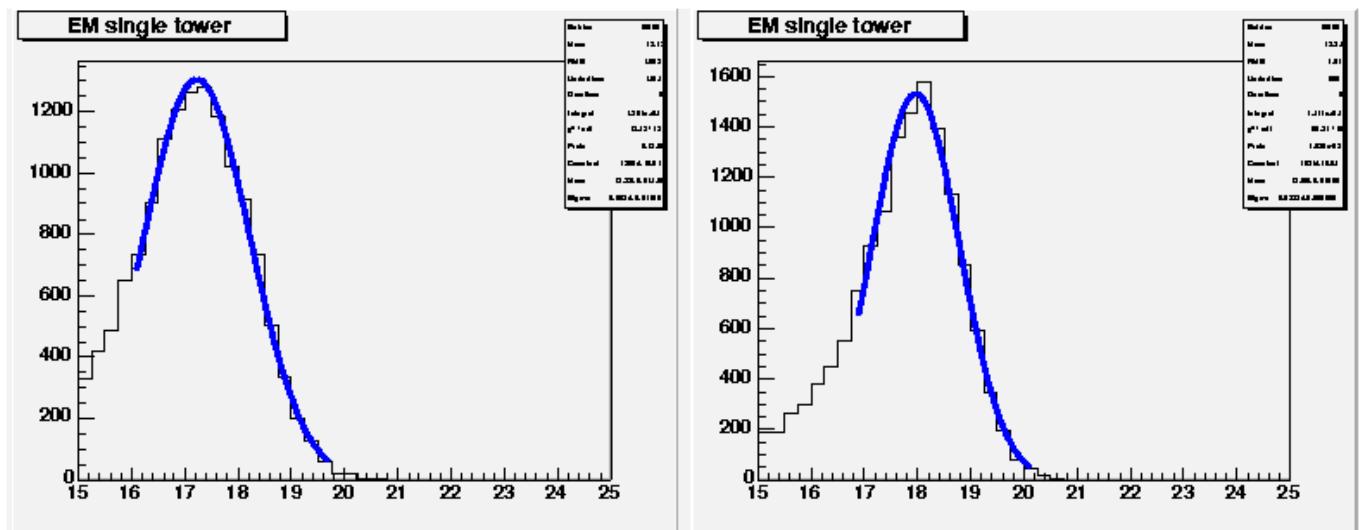
E_T in plug region for 10 GeV e

4.11.1

Release 4.9.1hpt1



EM energy in tower(40,03) for 20 GeV e

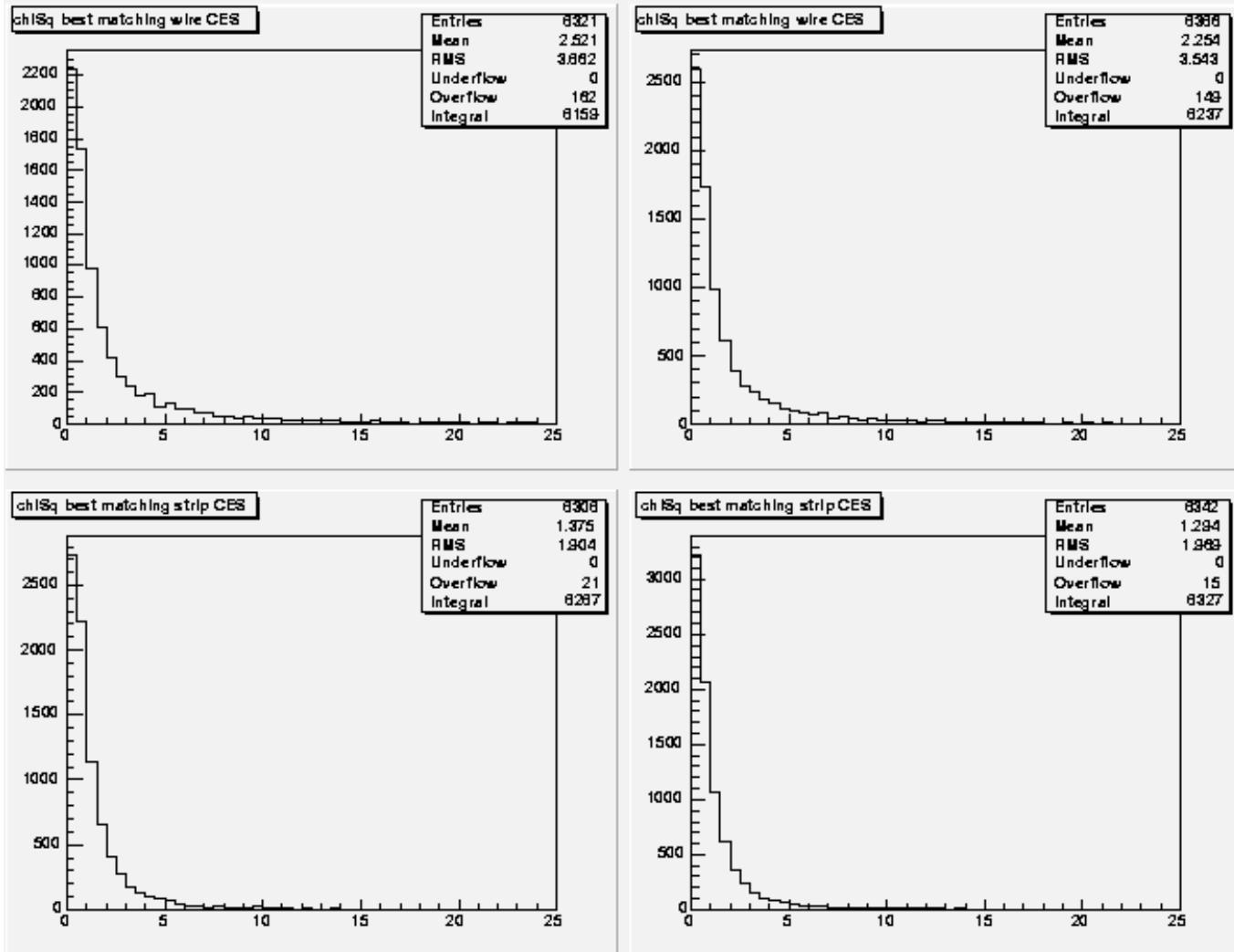


The fit result:

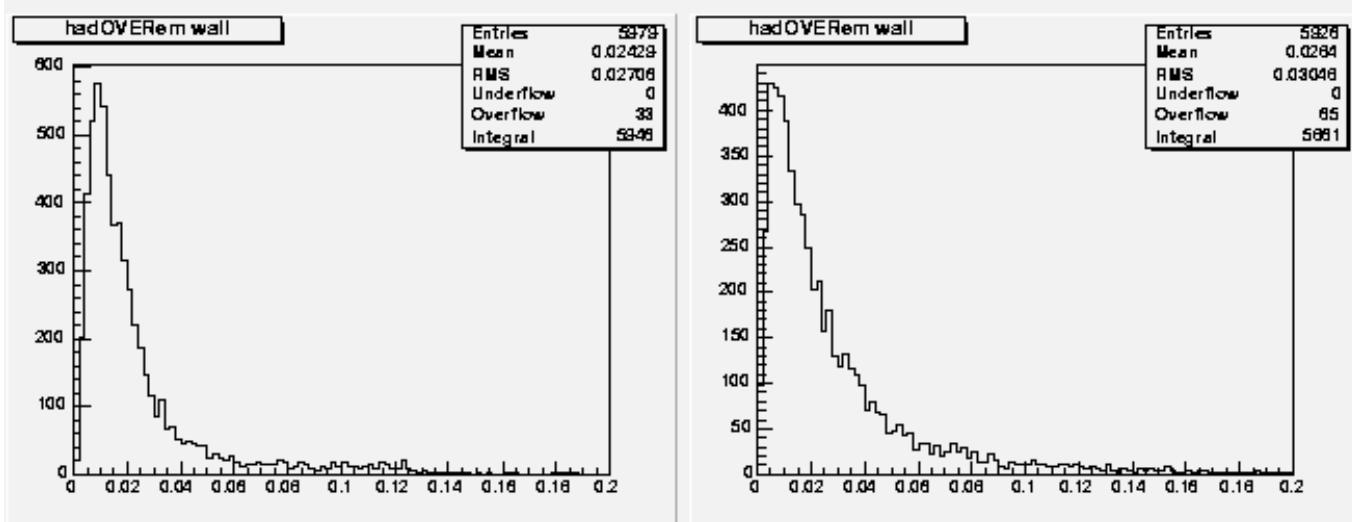
MEAN	17.23 ± 0.01 GeV	17.96 ± 0.01 GeV
SIGMA	0.997 ± 0.012 GeV	0.823 ± 0.009 GeV
CONST	1305 ± 15	1531 ± 18

CES χ^2 for 20 GeV e
4.11.1

Release 4.9.1hpt1



HAD/EM for 120 GeV e in plug region





What is different

Generated web-pages, available from:

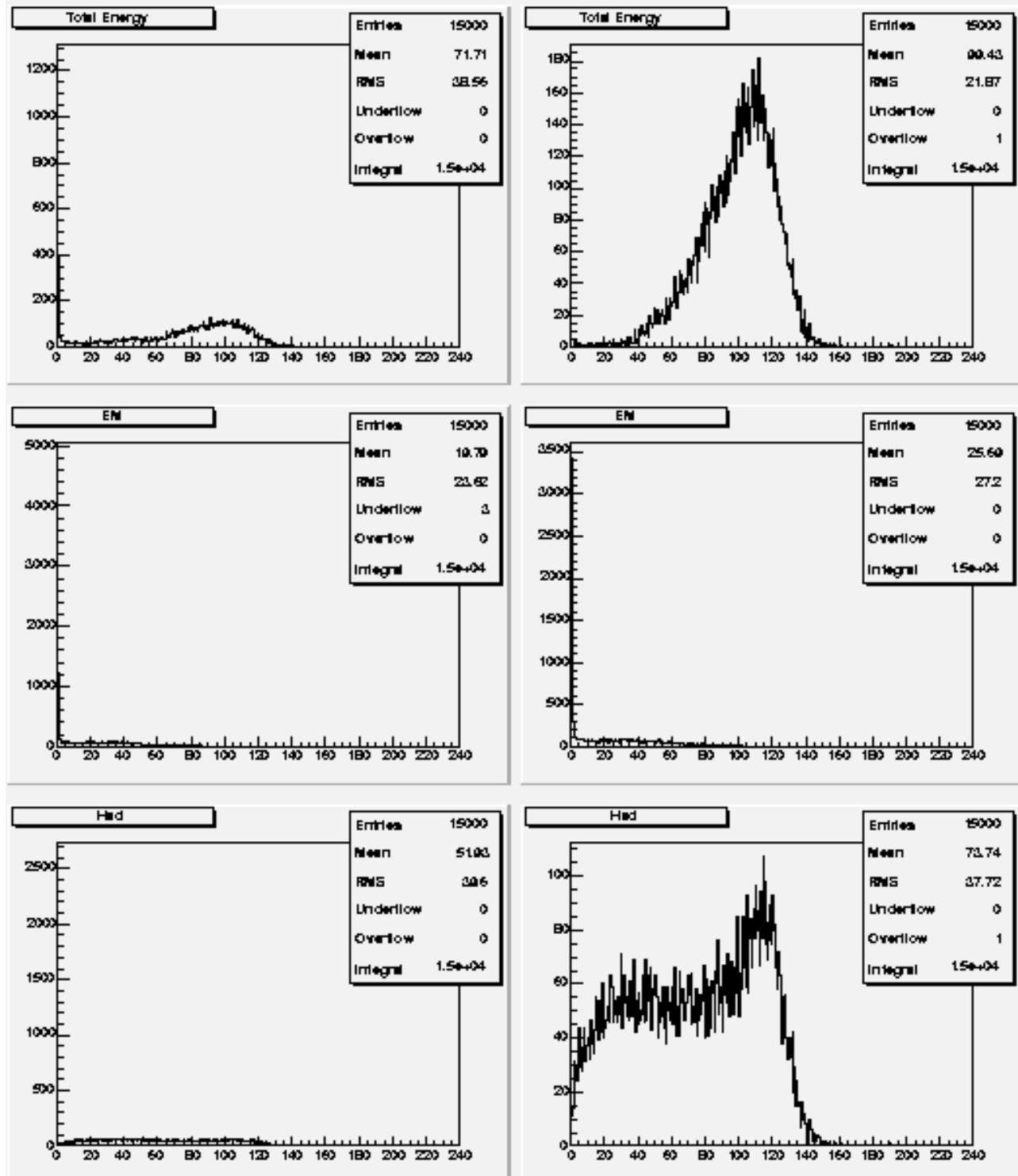
http://helios.physics.utoronto.ca/~shabnaz/sim_val/4.11.1/RegAna_pi

pions:

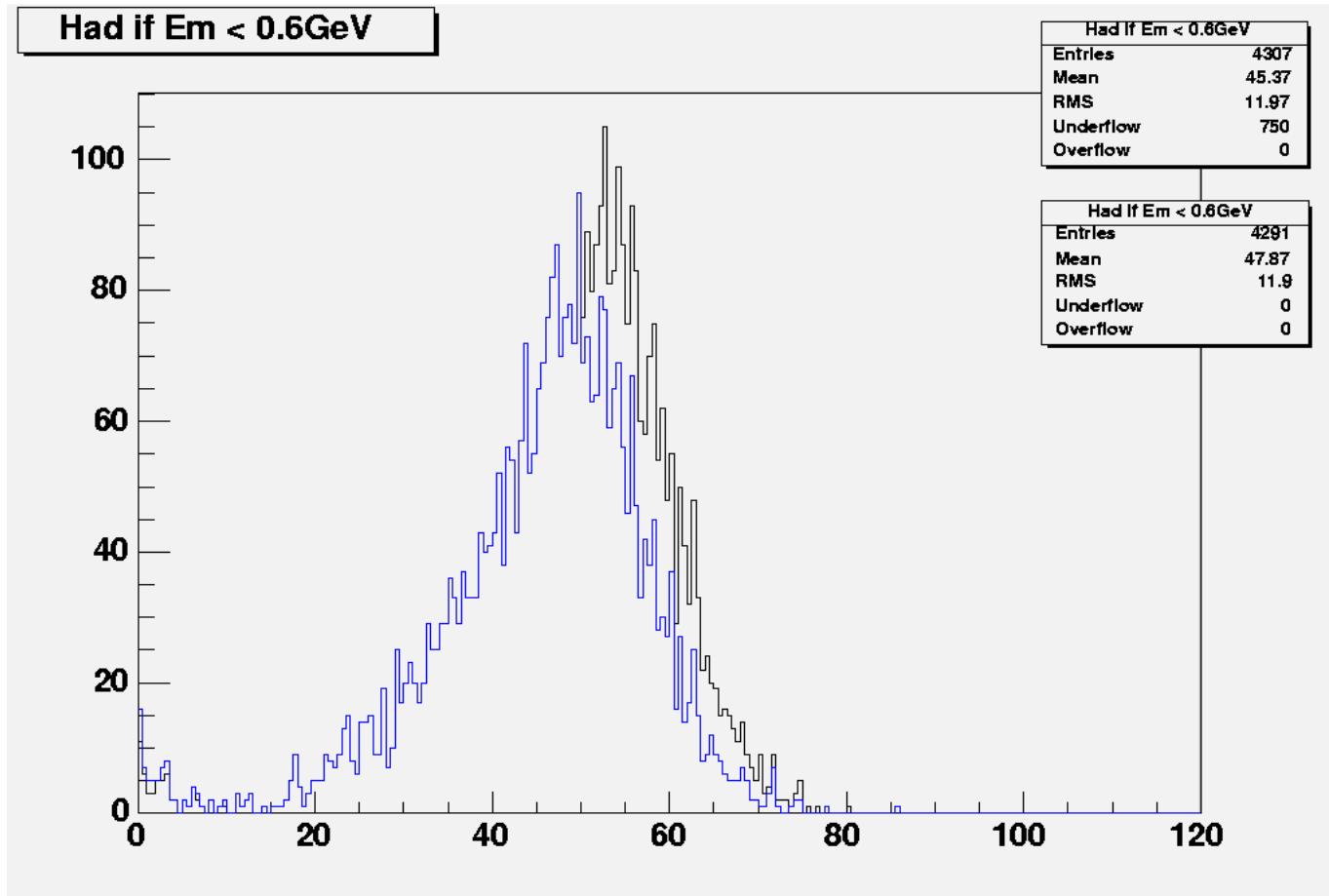
- ▶ Total energy in tower (40,03) is lower about %(2.5-11)
- ▶ HAD energy in tower (40,03) is lower by about %(8-18)
- ▶ HAD if ($\text{EM} < 0.6$) in tower (40,03) is lower (for example by about %8 for 10 GeV pions)
 - ▶ There are many events with 0 hadronic energy due to spike filter
- ▶ EM energy in tower (40,03) is higher by about %4
- ▶ EM energy in tower (28,03) is higher (%3 for 57 GeV pions)
- ▶ HAD energy in tower (28,03) is lower (%1 for 57 GeV pions)
- ▶ HAD if ($\text{EM} < 0.6$) in tower (28,03) is lower (for example by about %4 for 10 GeV pions)
- ▶ Differences in energy deposition in adjacent towers
- ▶ Zero fraction for low- p_T pions

Energies in tower (40,03) for 120 GeV π
4.11.1

Release 4.9.1hpt1



To understand the difference I used 4.9.1hpt1 simulation reconstructed in both releases [4.11.1](#) and [4.9.1hpt1](#)



Some of the events with deposited energies greater than 50 GeV will be filtered out due to **Spike Filter**

Fraction of zeros for low $p_T \pi^+$
using cdf note 1066 definition
Release 4.11.1

Release 4.9.1hpt1

