First validation of updated ATLFAST parameterization

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March 16, 2008

Validation strategy

- Use single-particle RDO (14.2.20.3) without calo noise
  - reconstruct with default *and* FastCaloSim calorimeter cells
    - updated (Feb. 27) FastCaloSim parameterization from Matti Werner
  - Compare cluster variables, like:
    - total energy, position resolution
    - "PID" distributions (`egamma::PID` shower vars for e/γ; longitudinal fractions for π)
- (eventually) rely on automatic comparisons
  - Compare means, RMS, Kolmogorov test probability
  - monitor isEM() ID efficiency (for e/γ)

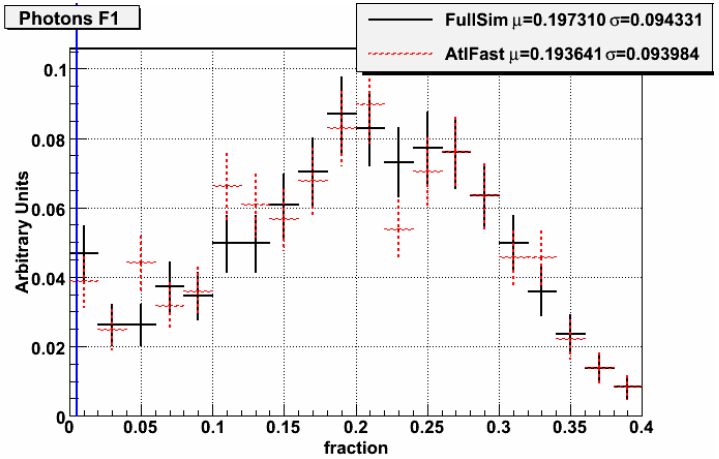
Photon validation

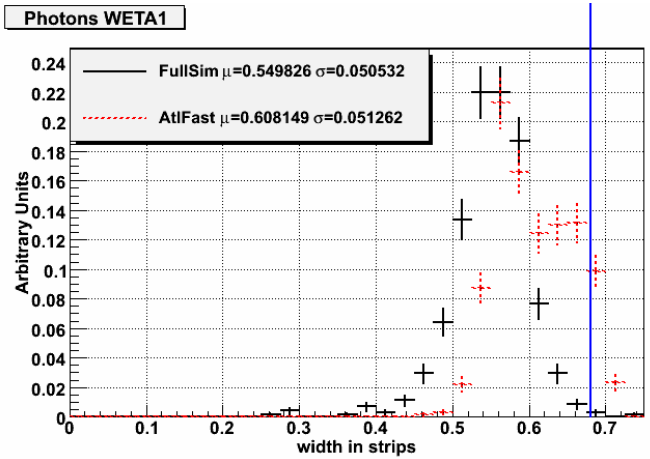
- Used Matti's photon samples in 4 η-bins

E	(eta)	Geant4 tight Eff (%)	FastCalo tight Eff (%)
50	0.2	92.4 ± 1.0	86.6 ± 1.3
100	0.2	92.9 ± 0.9	79.2 ± 1.5
200	0.2	90.4 ± 1.3	79.2 ± 1.5
50	0.8	91.4 ± 1.5	89.2± 1.8
100	0.8	91.5 ± 1.8	91.9 ± 1.7
200	0.8	90.5 ± 1.8	89.1± 2.1
50	1.2	92.5 ± 1.6	86.8 ± 2.0
100	1.2	96.1 ± 1.2	98.6 ± 0.8
200	1.2	97.3 ± 1.1	96.3 ± 1.5
50	2.0	88.5 ± 1.9	84.9 ± 2.3
100	2.0	87.2 ± 2.0	84.6 ± 2.2
200	2.0	96.1 ± 1.2	87.4 ± 2.4

Photon validation (2)

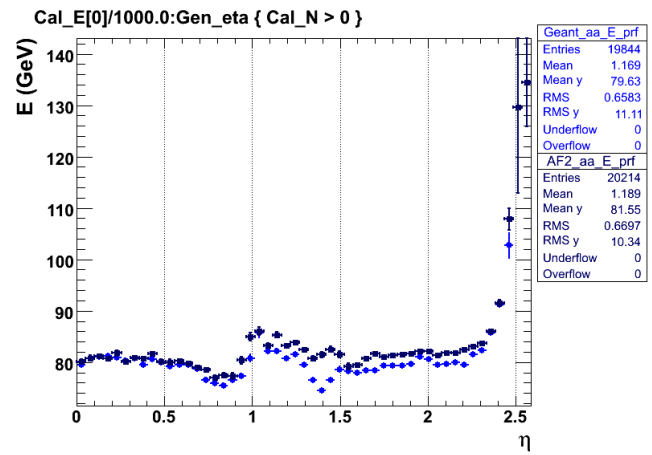
- Generally good agreement in longitudinal shapes
- Efficiency difference mostly due to `weta1`

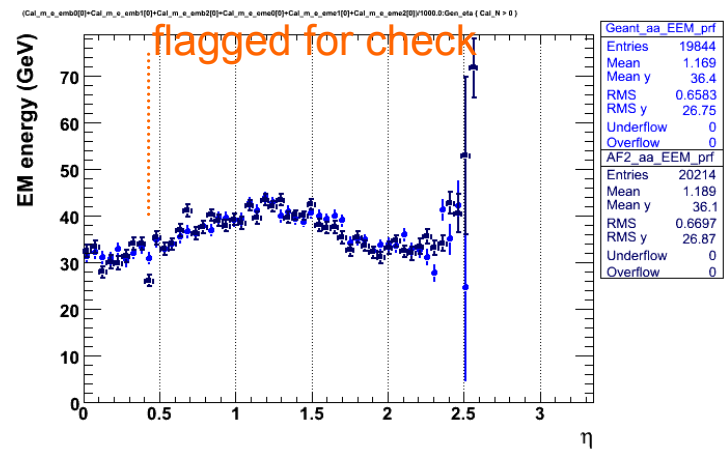




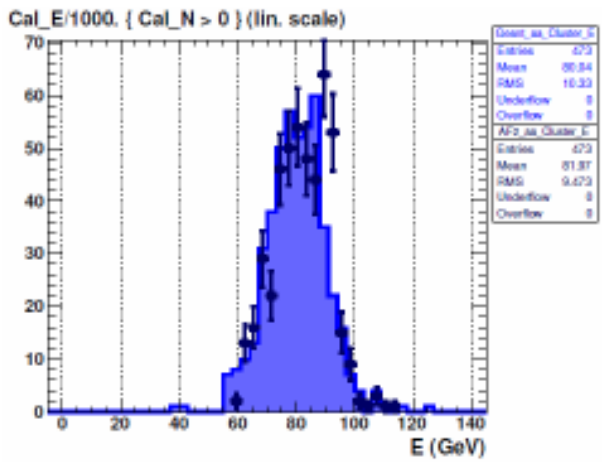
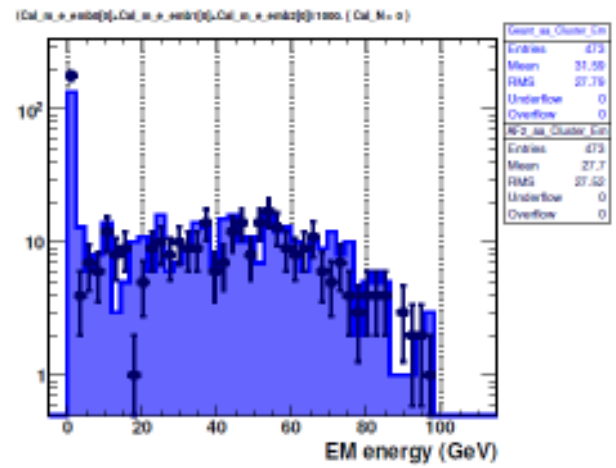
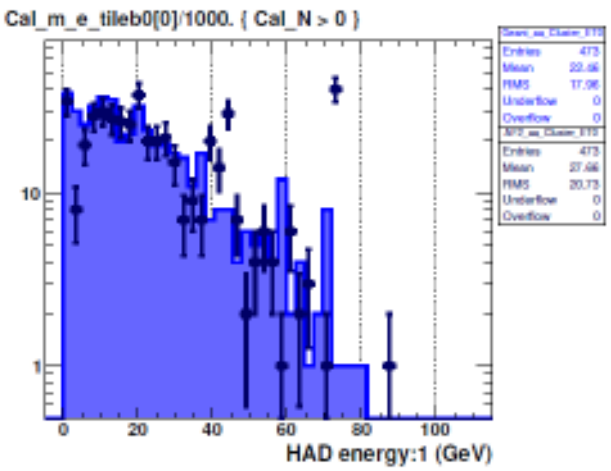
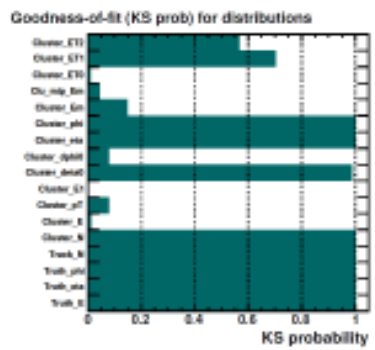
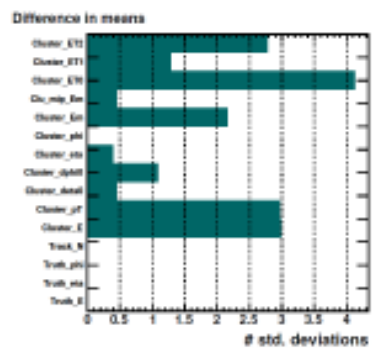
Pion validation

- Currently comparing CombinedClusters
  - absolute 15 GeV threshold (TopoClusters thresholds are relative to noise)
- good agreement at low-η
- ATLFAST-II: too much energy/too many clusters at calorimeter boundary





Questions/Next steps

- Noise
- continue simulating energy points

Problematic fit (?) example