

GEANT4 Physics Validation with Testbeam Data

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- HEC stand-alone testbeam
 - draft of the article
 - new round of simulations
- Combined testbeam of EMEC and HEC



HEC Stand-Alone Testbeam: Article

- “GEANT4 Physics Validation with the Testbeam Data of the ATLAS Hadronic End-Cap Calorimeter”
- GEANT4 version [6.2 with patch-02](#)
- **Draft:** http://www.mppmu.mpg.de/~kiryunin/art_2005-04-12.pdf
- Questions:
 - energy leakage
 - list of authors



HEC Stand-Alone Testbeam: New Simulations

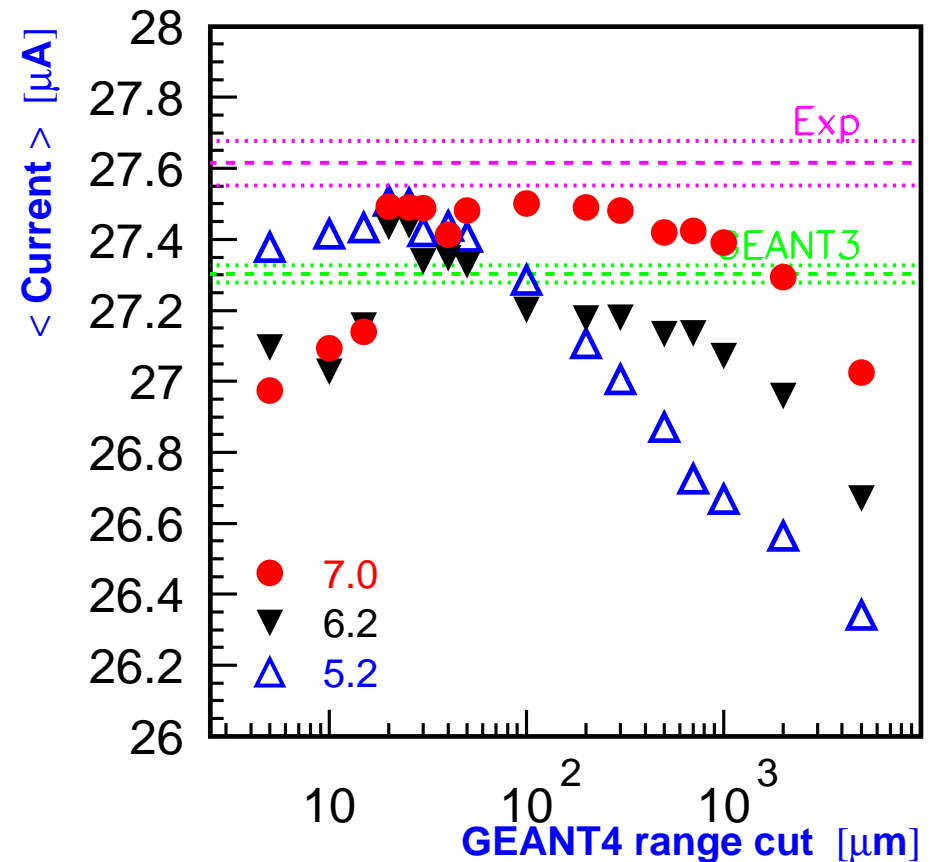
- GEANT4 version 7.0 with patch-01
- PACK 2.4, physics lists LHEP 3.7 and QGSP 2.8:
no change w.r.t. version 6.2
- Add new (for us) physics lists LHEP_GN and QGSP_GN:
 - lists for a typical HEP collider detector
 - gamma- and electro-nuclear reactions



HEC Stand-Alone Testbeam: New Simulations

Standard set of simulations:

- Scan over the GEANT4 range cut with 100 GeV electrons
- Energy scan with electrons
- Energy scans with charged pions (different physics lists)



Combined Testbeam of EMEC and HEC

- Impact point J and 8 neighbours (± 5 mm in X/Y)
- GEANT4
 - version 6.2 with patch-02
 - samples with calibration hits
 - 60 GeV electrons: 10, 30, 100 and 700 μm range cut
 - pion energy scans (LHEP and QGSP): 700 μm range cut
- GEANT3
 - two sets of cuts
 - electron energy scans
 - pion energy scans
- Simulations available. Next steps:
 - analysis (energy in EMEC/HEC layers, resolution, leakage, etc.)
 - study dependences on the range cut

