



# EM physics validation results for Geant4 11.1ref01

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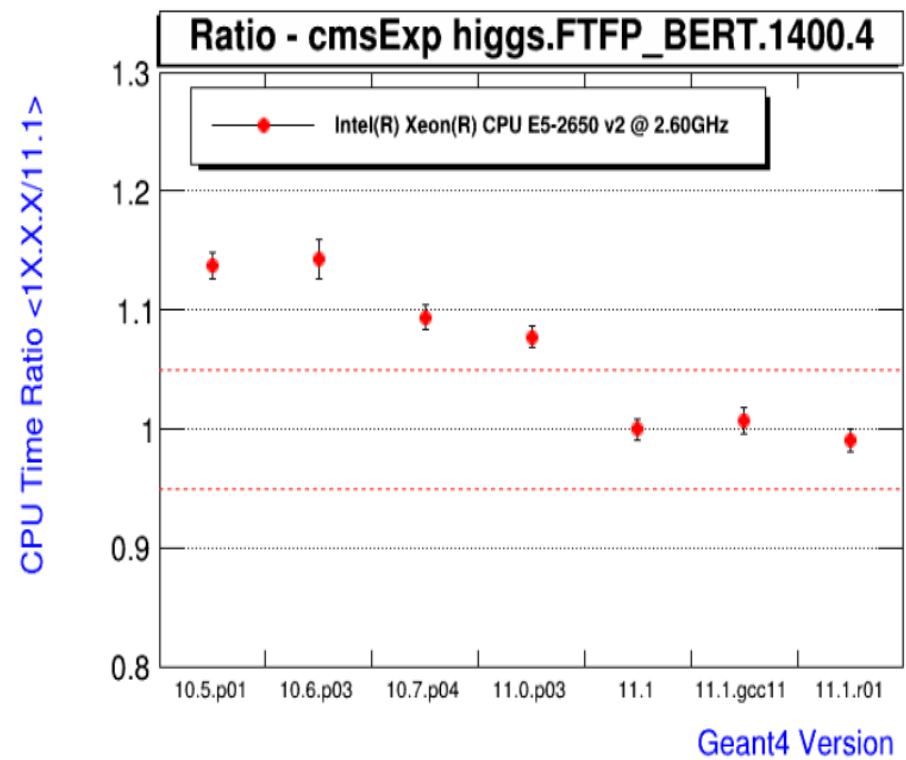
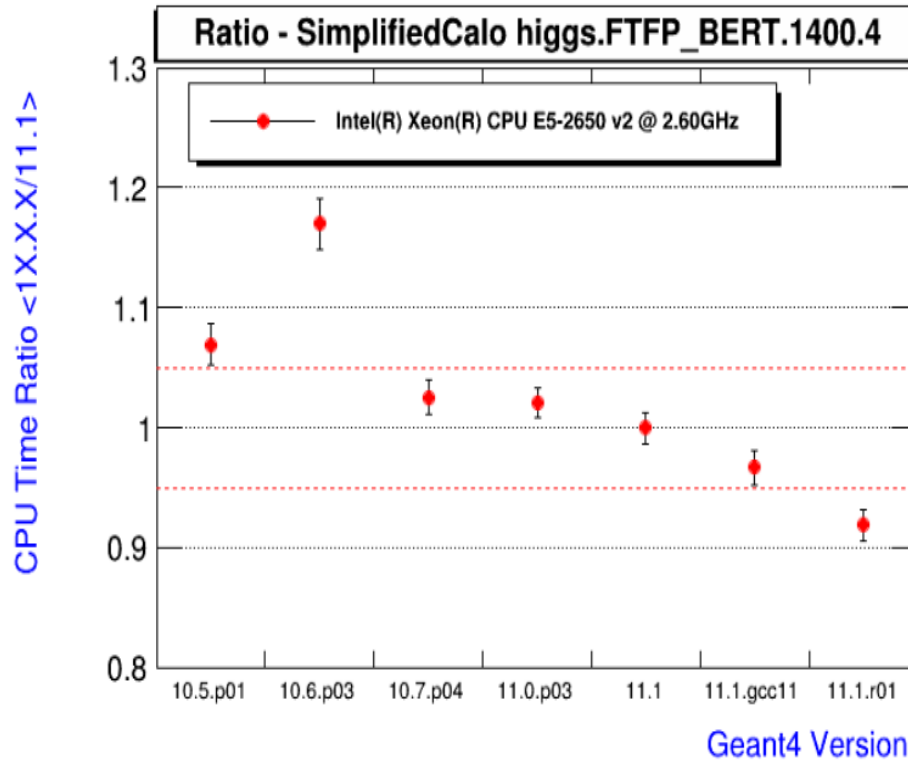
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7 February 2023

# Modifications in EM after 11.1

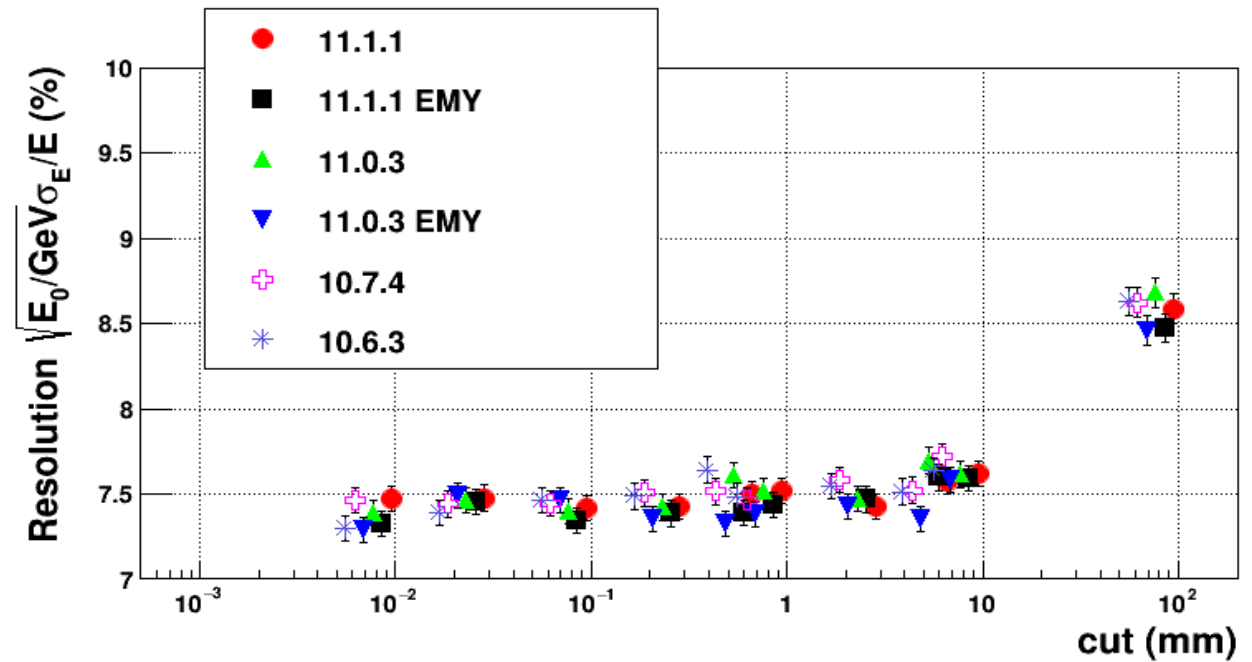
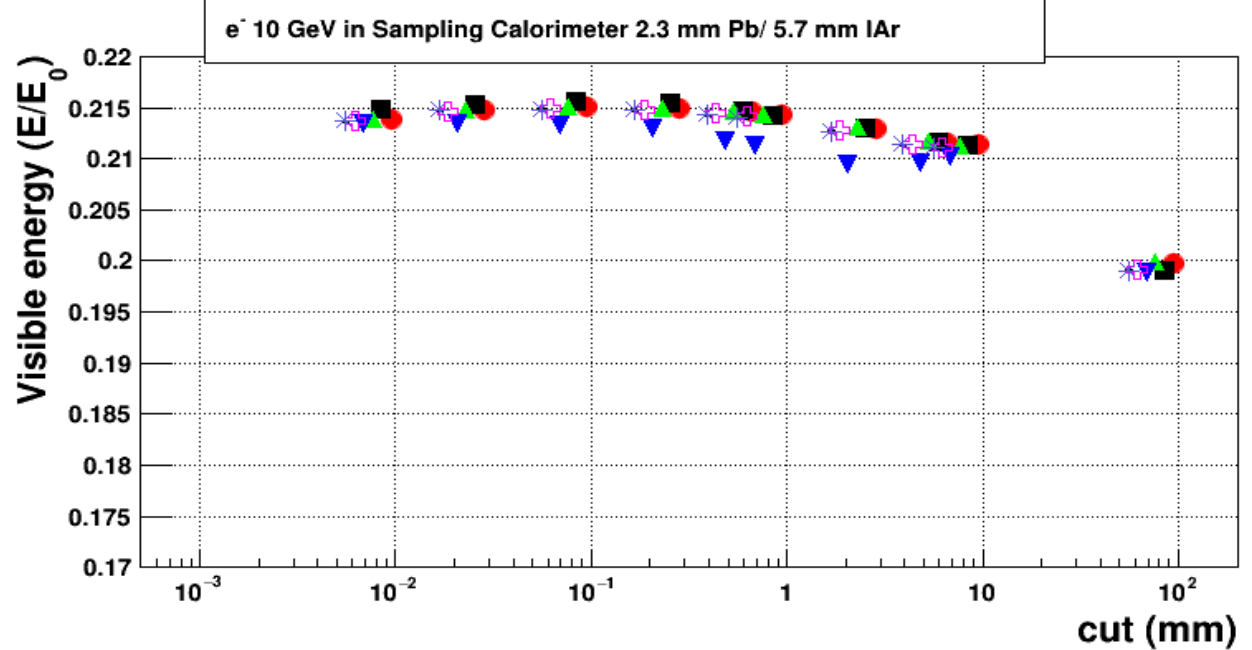
- **Fix #2520** for materials – allowing recursive search for a base material
- Added extra flag Get/Set method and UI command for positron correction in **G4UrbanMscModel**
- Added extra method to access **G4LEDATA** path allowing only 1 call to environment variable in EM
  - Usage is implemented in all standard classes and in low-energy classes used in the default EM physics
- **Hoang Tran continues clean-up of DNA sub-directory**
  - Improved interface to combine models per DNA material
  - Use material index instead of name in run time
- **Fix #2521** – in gamma general process always select a process in **PostStepDolt(..)**
- **Fix #2523** – updated list of processes for physics list helper
  - Forgotten muon pair production by muon and general processes

# Release monitoring by FNAL (J.Yarba)



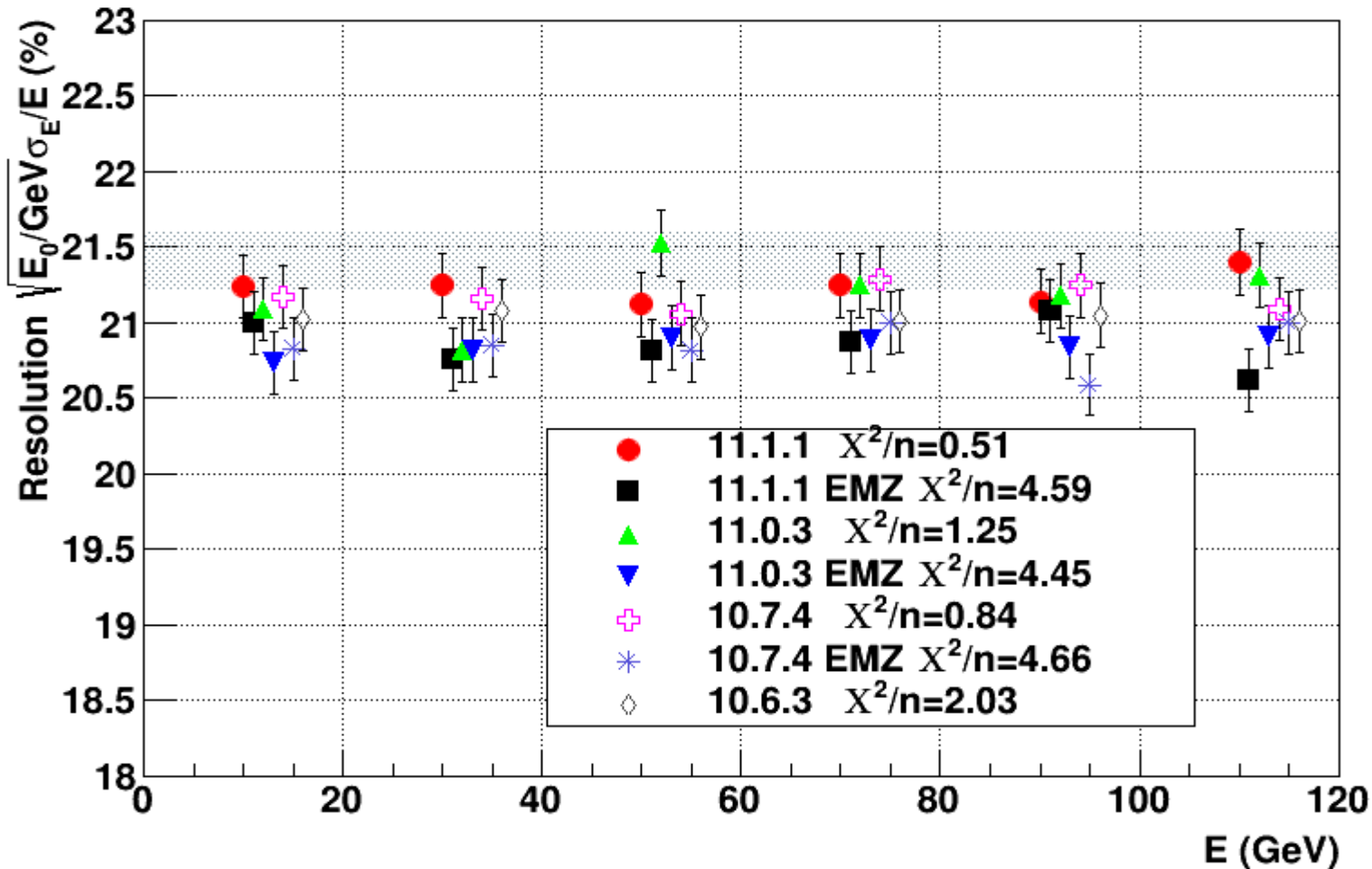
After 11.1 FNAL team migrated to gcc11, which improves performance of SimplifiedCalo but not cmsExp, the last demonstrates the most effect from migration 10.7.4 -> 11.1

# Simplified ATLAS- barrel



# Simplified ATLAS HEC

$e^-$  in Sampling Calorimeter 2.5 cm Cu/ 0.8 cm IAr, cut = 0.7 mm



# Test Results

- Testing results will be available:
  - <https://test-geant4-tools.web.cern.ch/test-geant4-tools/emtesting/>
- In general, EM results are stable