



# EM validation results for release 10.7p02

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- G4DensityEffectData: fixed typo in Z=37 elementary material name. Addressing problem report #2324.
- G4AtomicShells and G4AtomicShells\_XDB\_EADL, fixed method GetNumberOfFreeElectrons(). Addressing problem report #2356.
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- + constructors/electromagnetic
  - o G4EmBuilder: added geantinos to the minimal list of EM particles.
  - o GeneralGammaProcess: reduced usage of protected variables.
  - o G4EmStandardPhysics, G4EmStandardPhysicsGS: set default verbosity to 1.
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- + muons
  - o G4EnergyLossForExtrapolator, G4TablesForExtrapolator: allow several runs with extrapolator; fixed extrapolation for hadrons.
  - More thread safe initialisation and destruction.
- + utils
  - o G4EmParameters: fixed line breaking in printouts. Addressing problem report #2350.
  - o Fixed shadowing compilation warning in G4EmCorrections on gcc-11.
- + xrays
  - o G4Scintillation: changed 'IsApplicable' to all particles except optical-photon and short-lived. Addressing problem report #2372.

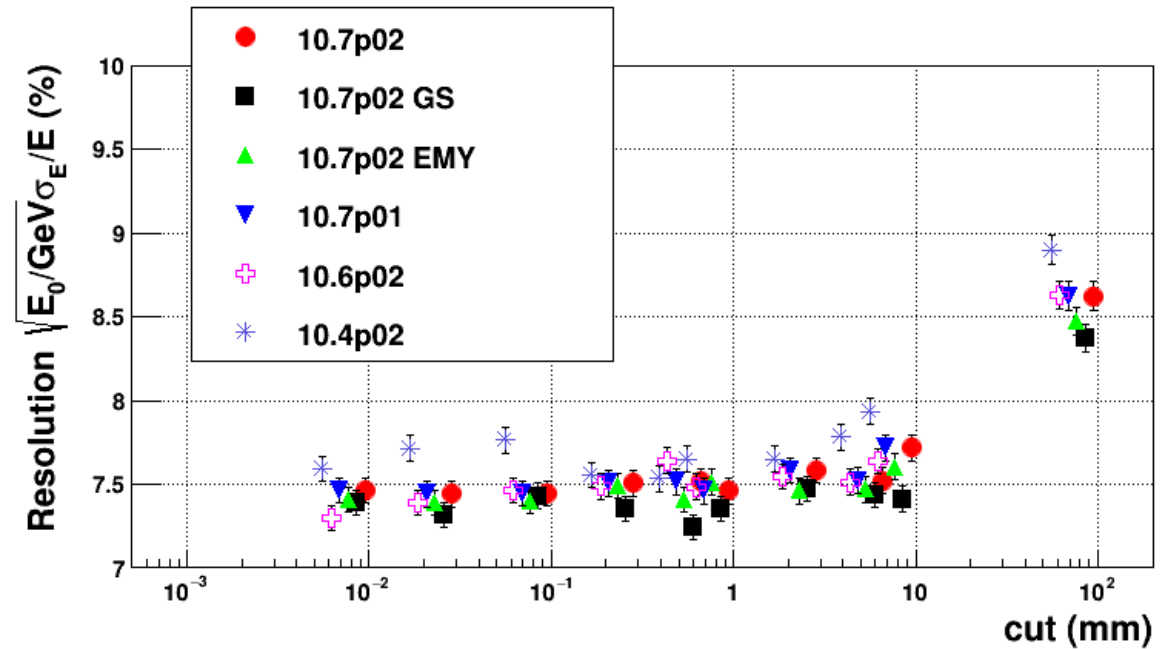
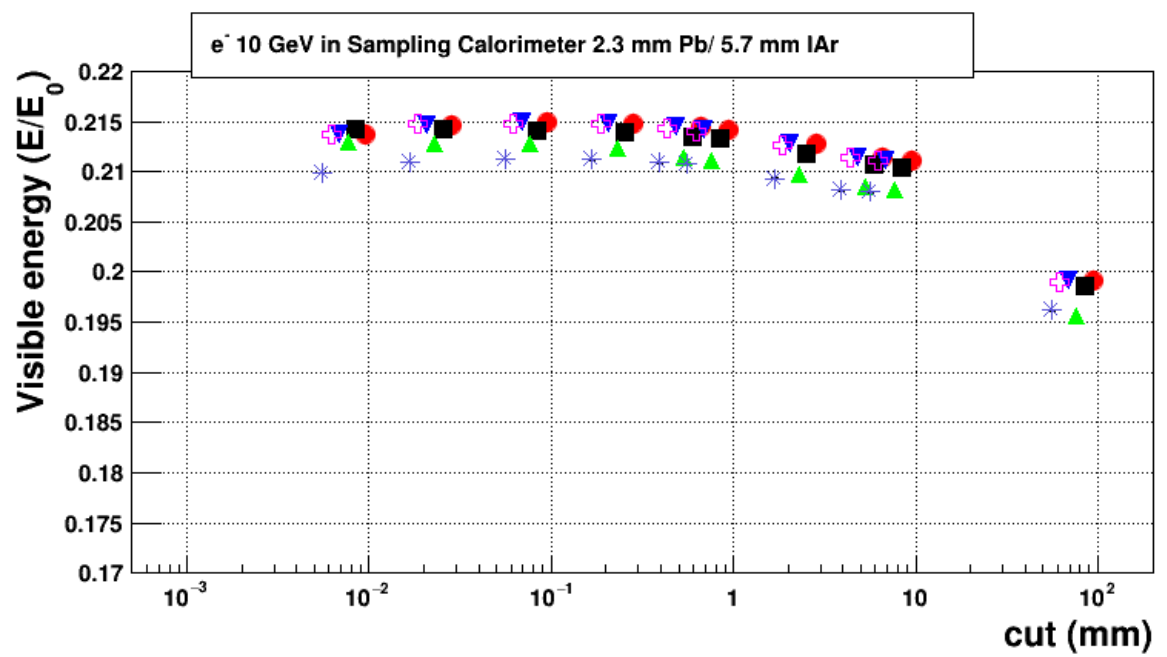
# Updates included into 10.7p02 on top of 10.7p01

- **G4DensityEffectData:**
  - fixed typo in Z=37 elementary material name (problem #2324)
- **G4AtomicShells and G4AtomicShells\_XDB\_EADL:**
  - fixed method GetNumberOfFreeElectrons() (problem #2356)
- **G4EmBuilder:**
  - added geantinos to the minimal list of EM particles
- **GeneralGammaProcess:**
  - reduced usage of protected variables
- **G4EmStandardPhysics, G4EmStandardPhysicsGS:**
  - set default verbosity to 1
- **G4EnergyLossForExtrapolator, G4TablesForExtrapolator:**
  - allow several runs with extrapolator; fixed extrapolation for hadrons. More thread safe initialisation and destruction.
- **G4EmParameters:**
  - fixed line breaking in printouts (problem #2350)
- **G4Scintillation:**
  - changed IsApplicable() method allowing to all particles except optical-photon and short-lived provide scintillations (problem #2372)

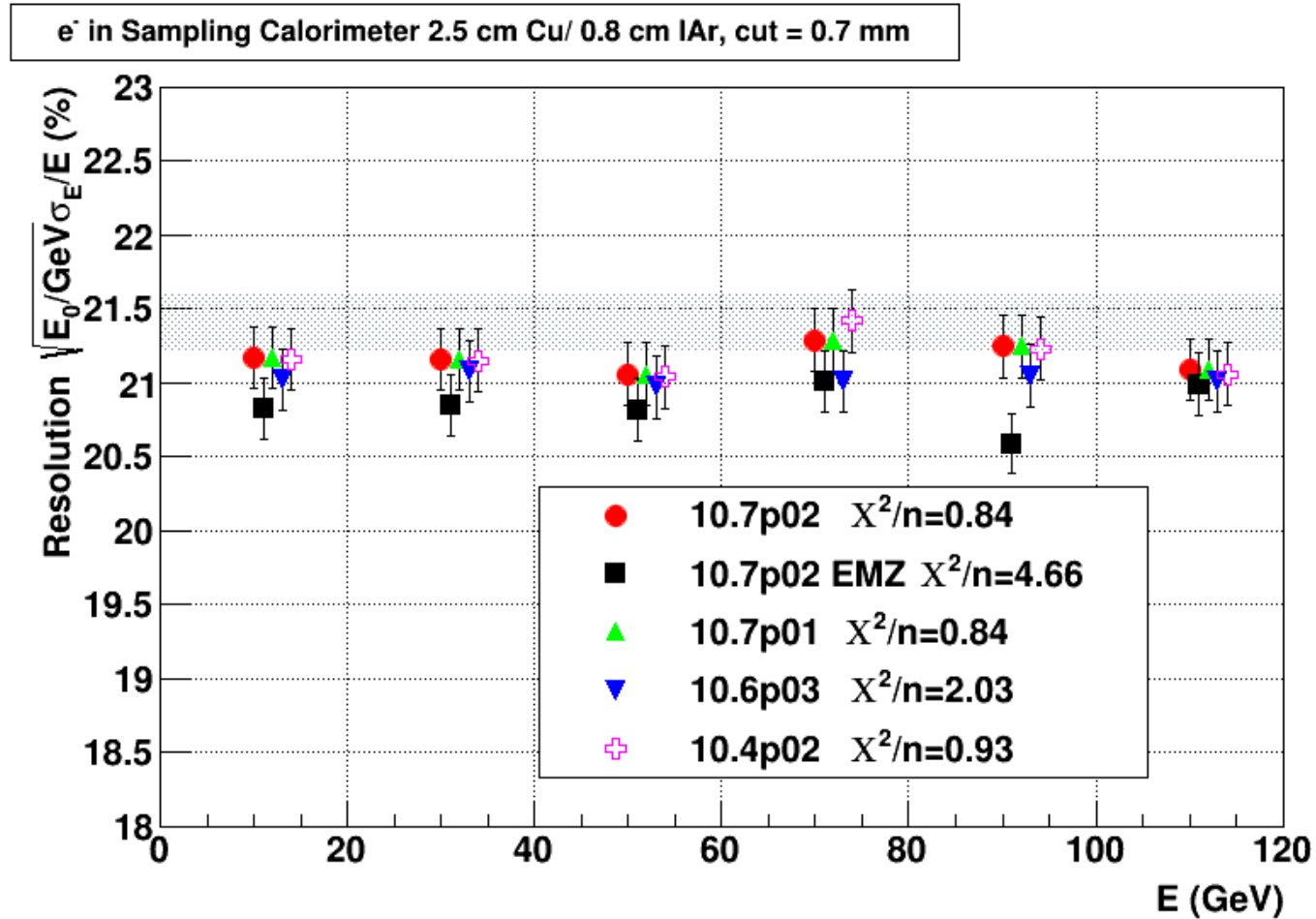
# Test Results

- Testing results are available:
  - <https://test-geant4-tools.web.cern.ch/test-geant4-tools/emtesting/>
  - All results are the same for Geant4 10.7p01 and 10.7p02

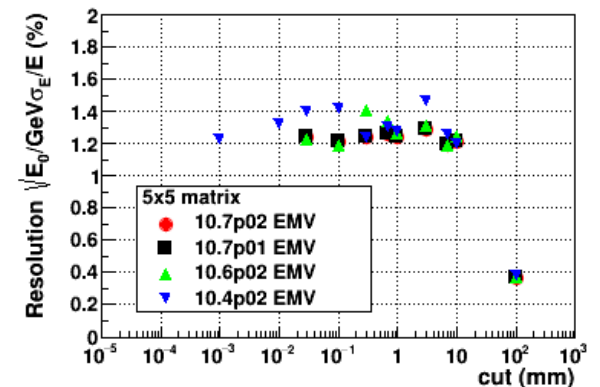
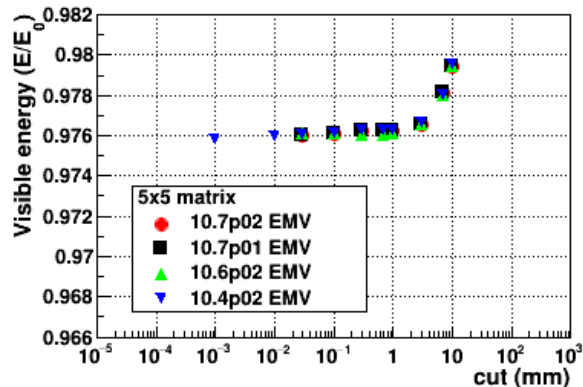
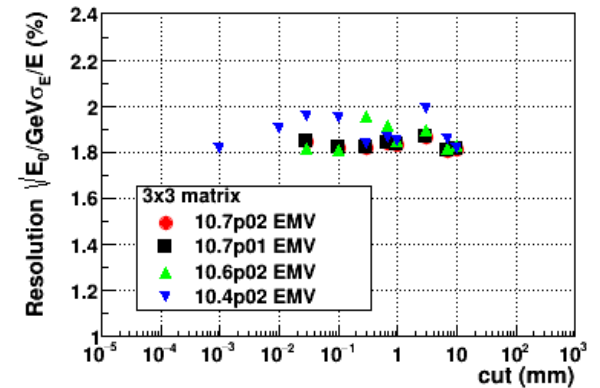
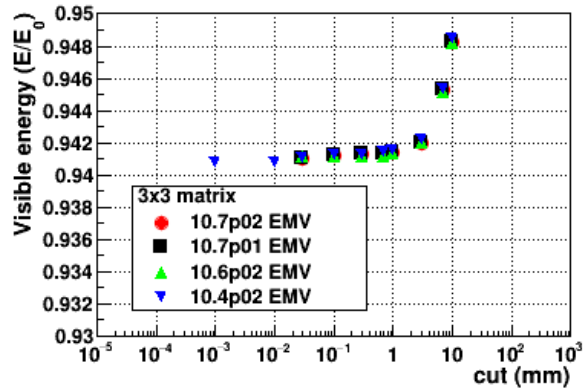
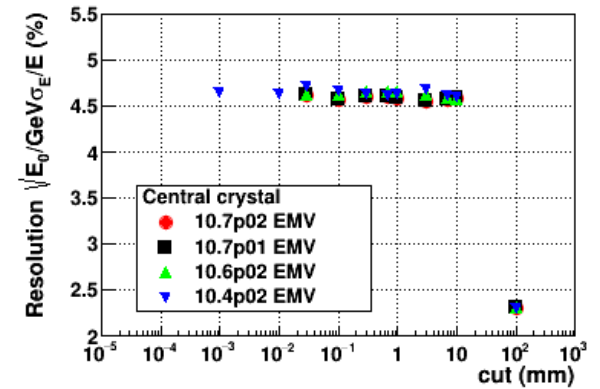
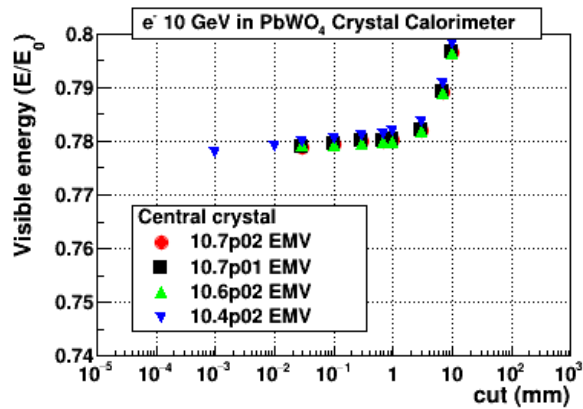
# Simplified ATLAS Barrel



# Simplified ATLAS HEC

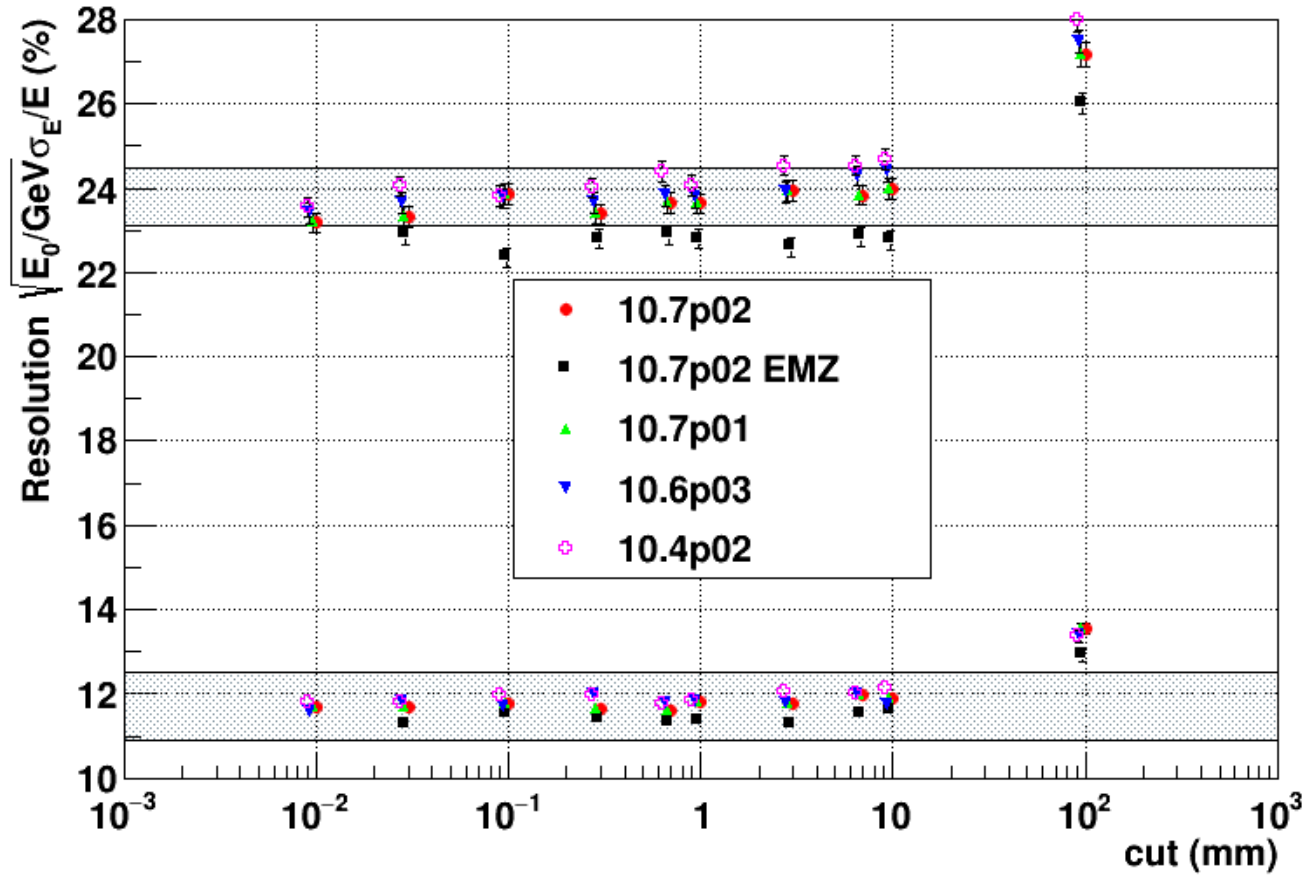


# Simplified CMS ECAL General gamma process is used



# ZEUS test-beam

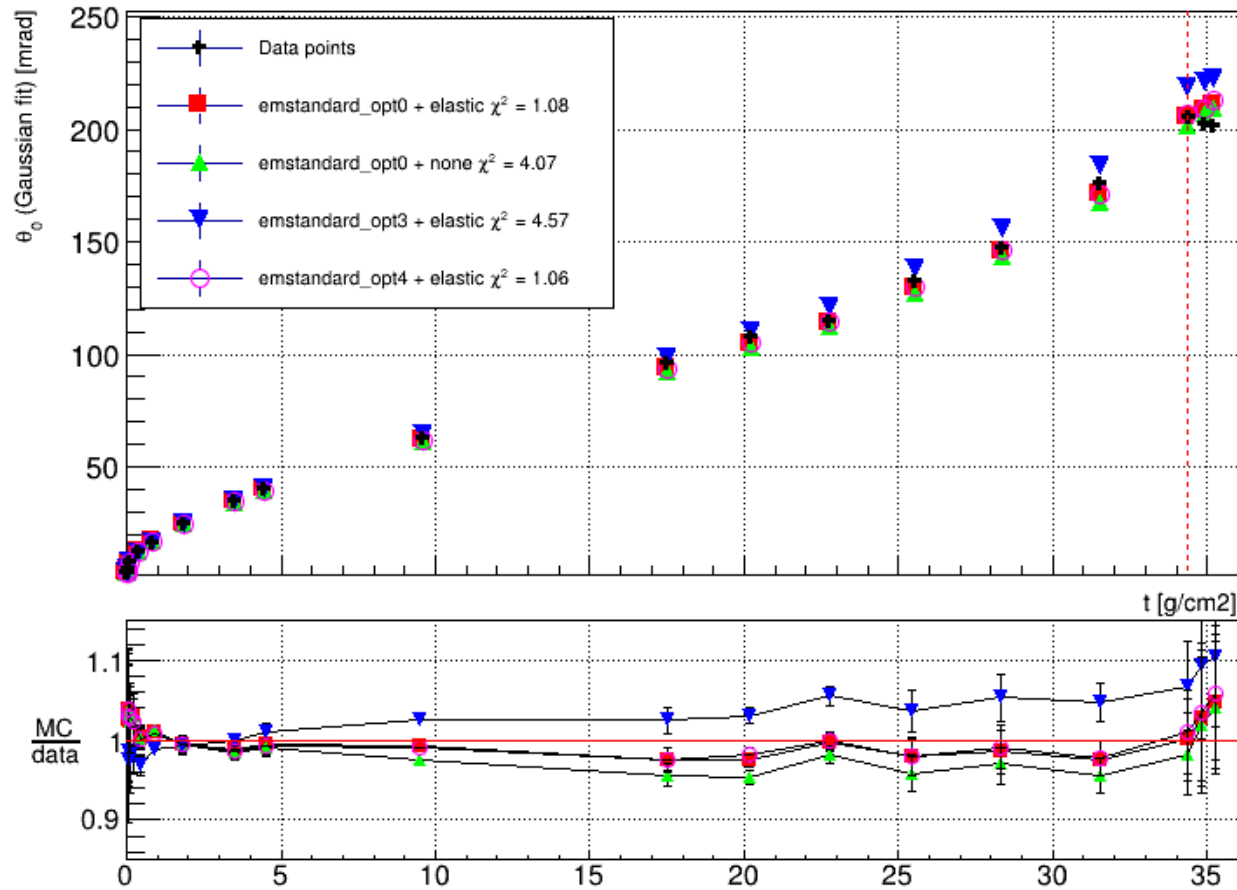
$e^-$  10 GeV in Pb/Scin Sampling Calorimeters





# Proton scattering in Lead

Charachteristic Angle Distribution for Lead



# Electron scattering off the Gold target

