



Version 11.0

# Exercises for EM Physics

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Geant4 Advanced Course



- TestEm7 – simulation of energy profile
  - Use batch and interactive modes
  - What processes are used for
    - gamma, e-, e+, proton
  - What are the cut in range?
- Set primary particle proton and run with different range cuts
  - /gun/particle proton
  - /gun/energy 100 MeV
  - /run/setCut 1 km
  - /run/beamOn 10
  - /run/setCut 1 mm
  - /run/beamOn 10
  - /run/setCut 0.001 mm
  - /run/beamOn 10

- TestEm0 – demonstration of G4EmCalculator capabilities
  - Use in batch and interactive mode
- TestEm5 – simulation of beam transport via thin target
  - Use batch and interactive modes
- Estimate theoretical thickness of shielding using TestEm0
  - For 1 MeV gamma beam and Aluminium target
  - For 10 MeV gamma beam and Lead target
- Confirm estimation using TestEm5 for the same beam and the target
  - What is the thickness of shielding for electron beam of 1 or 10 MeV in the same targets