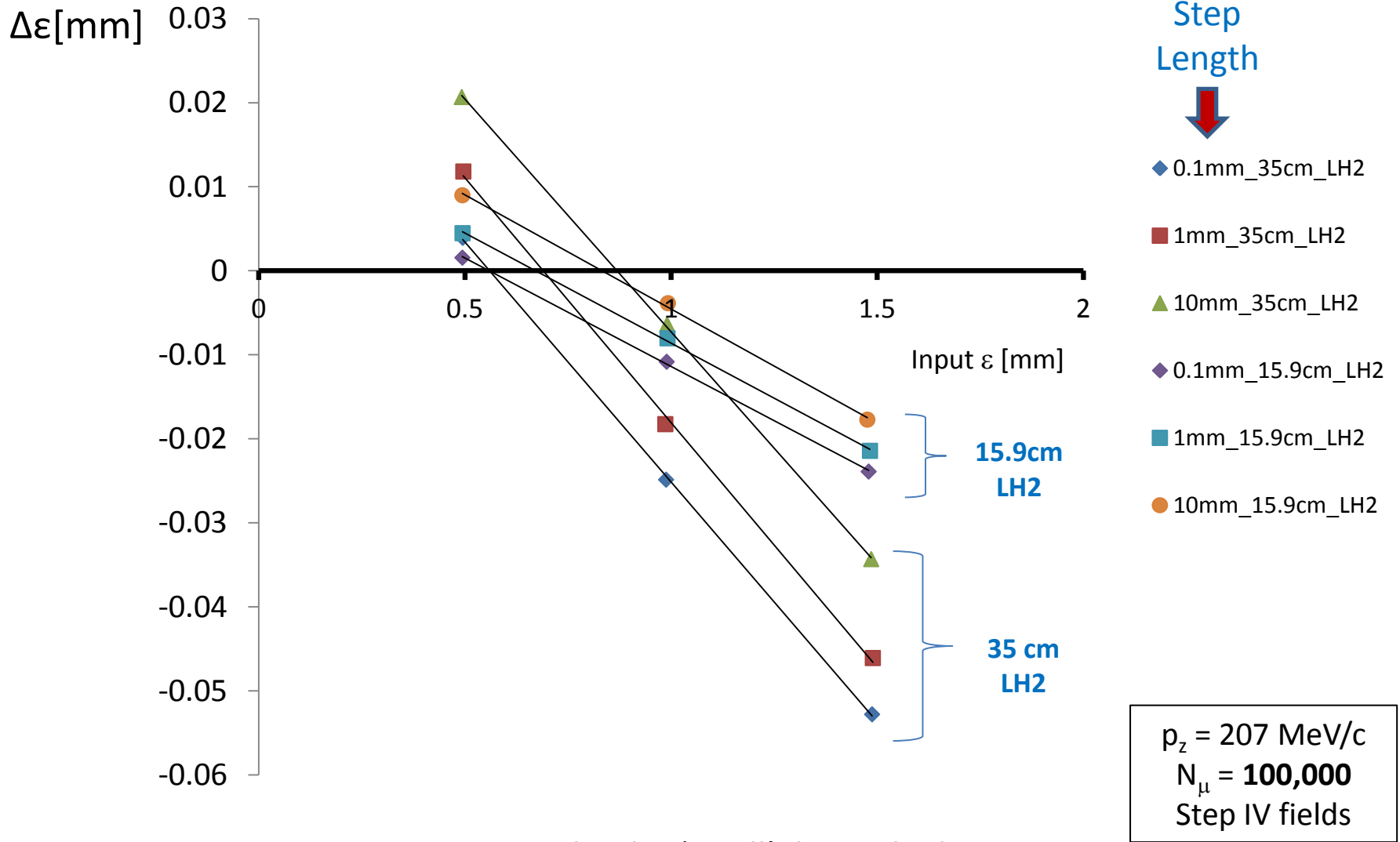


Step Length dependencies in G4MICE

Timothy Carlisle
Oxford

Cooling in LH₂



Errors expected to be 'small' due to high stats (100k muons)...but still need adding

Summary

- Eq. Emittance ε_0 strongly dep. on Step Length.
 - Consistent value in different absorber widths however – expected.
 - Cooling formula isn't much help in deciding which value is correct!
(See CM32/31 talks)
- G4MICE (Geant4) uses Lewis Theory for Multiple Scattering
 - From the Geant4 manual: *“the simulation results can depend on the value of the step length and generally one has to **select the value of the step length carefully.**”*
 - How does one select the correct Step Length?
 - Is this dependency a **bug**? Or simply a fact of life in Geant4?
- G4MICE uses Geant4.9.2...latest version is 4.9.5
- Suggestions:
 - Re-run in latest version of Geant4? (Is it a bug?)
 - Contact Geant4 developers?