

We measured “total (n,γ) counts” following neutrino interactions in water

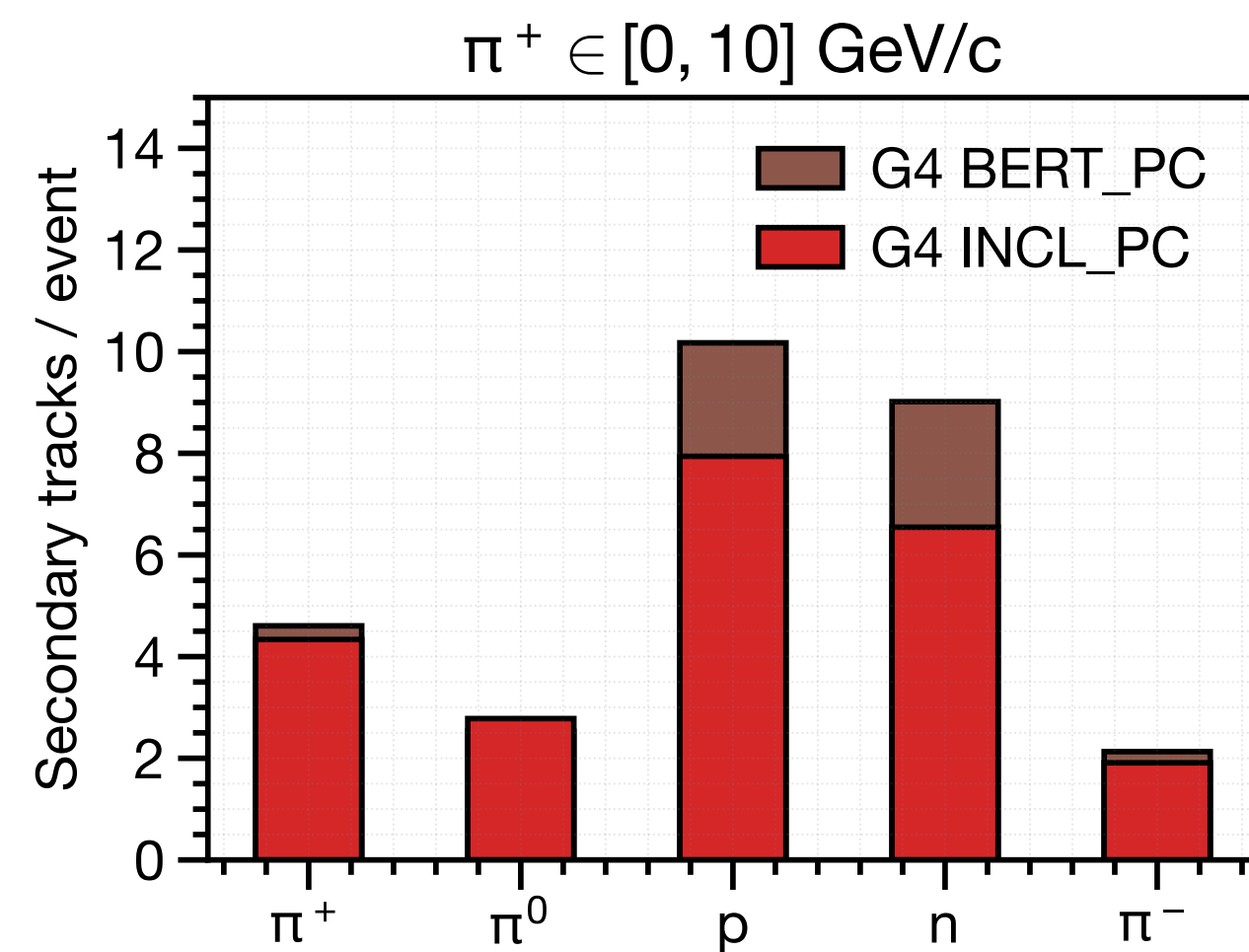
Geant4 INCL++ works well for events without π production
but start to deviate for multi-GeV π -producing events

We would like to ask for expert opinion on why this happens.

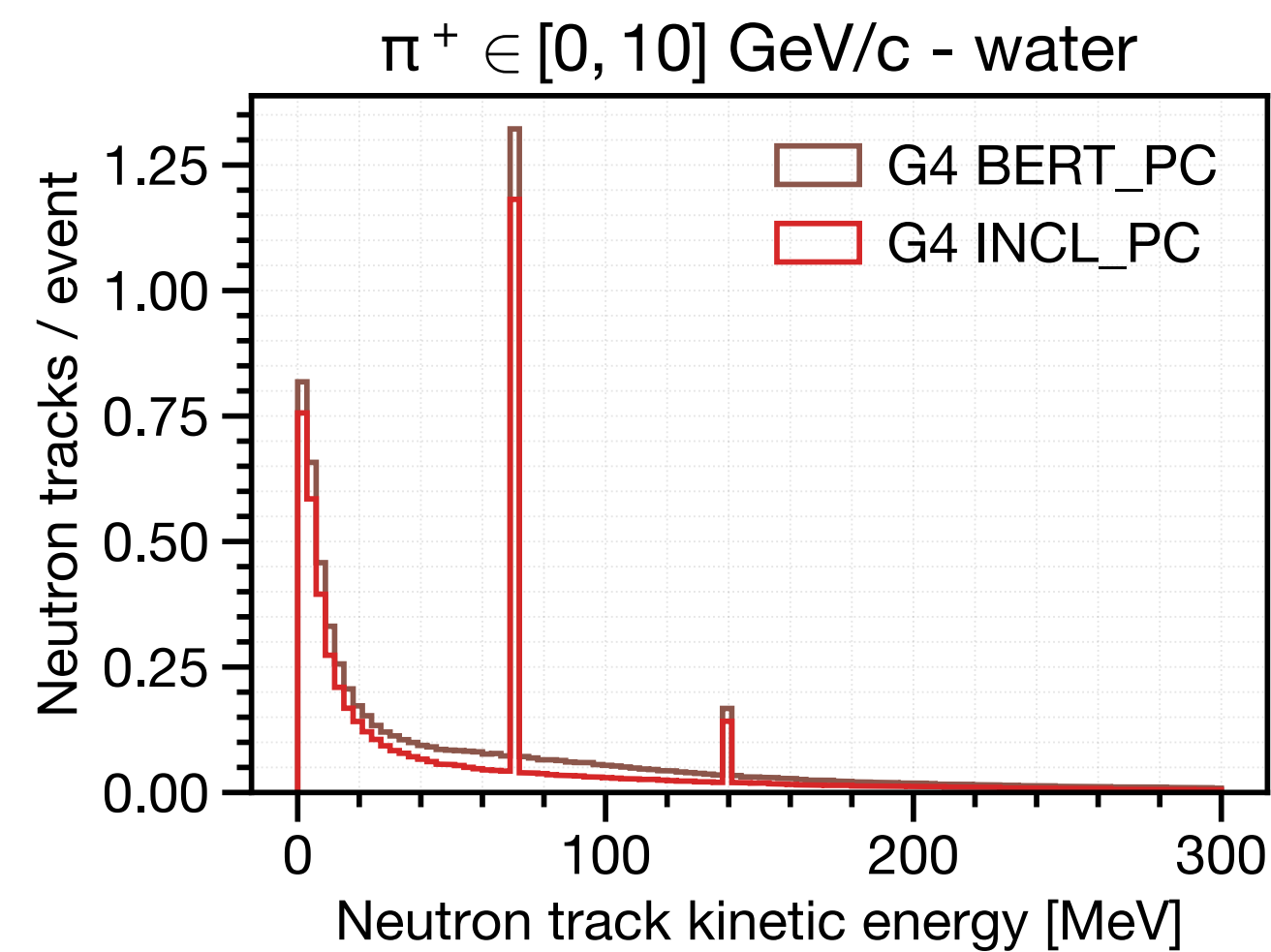
Test with Geant4.10.5.p01:

100k π^+ with kinetic energy random in $[0, 10]$ GeV propagates through water

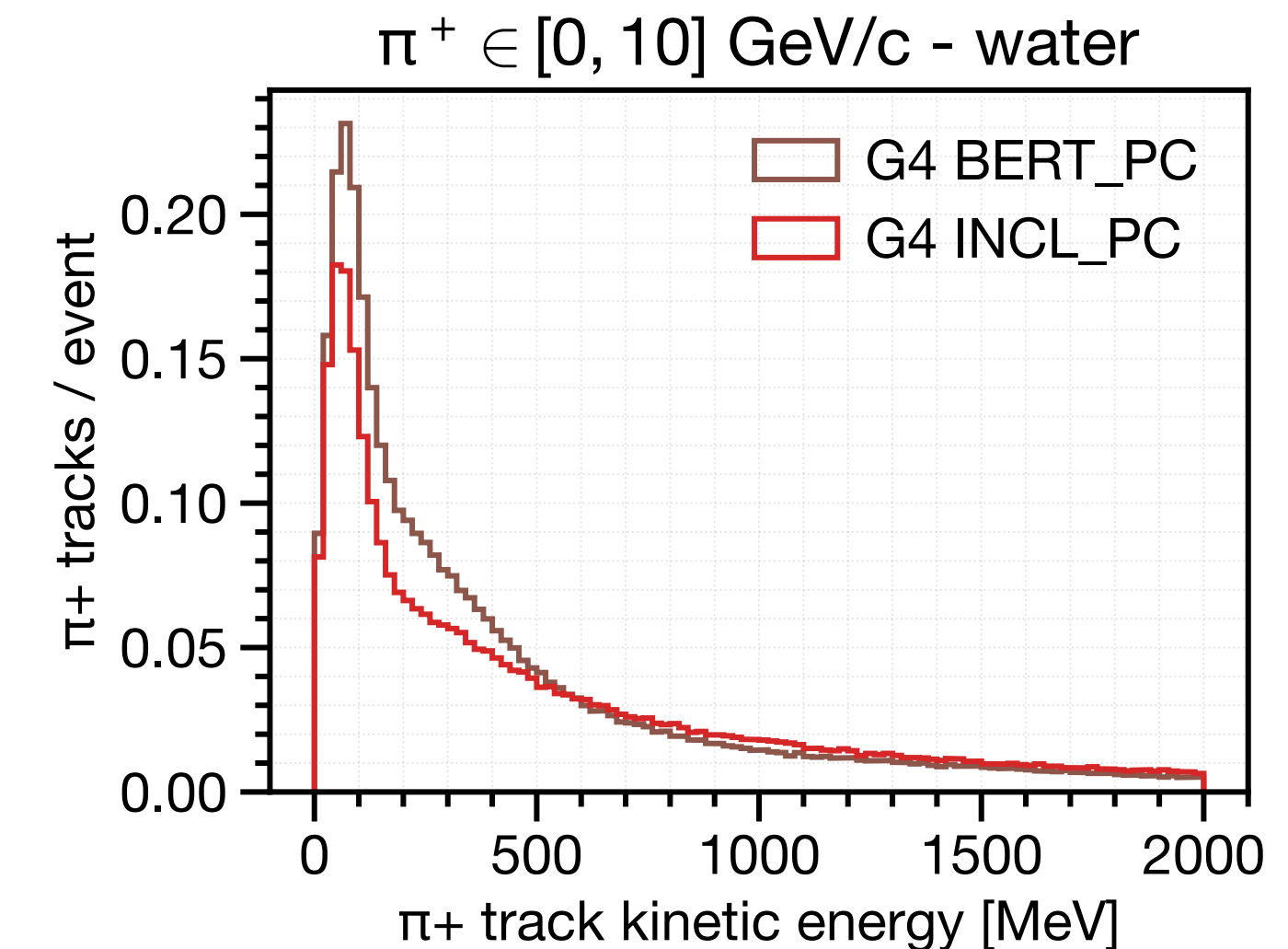
Secondary track counts



Secondary n KE



Secondary π^+ KE



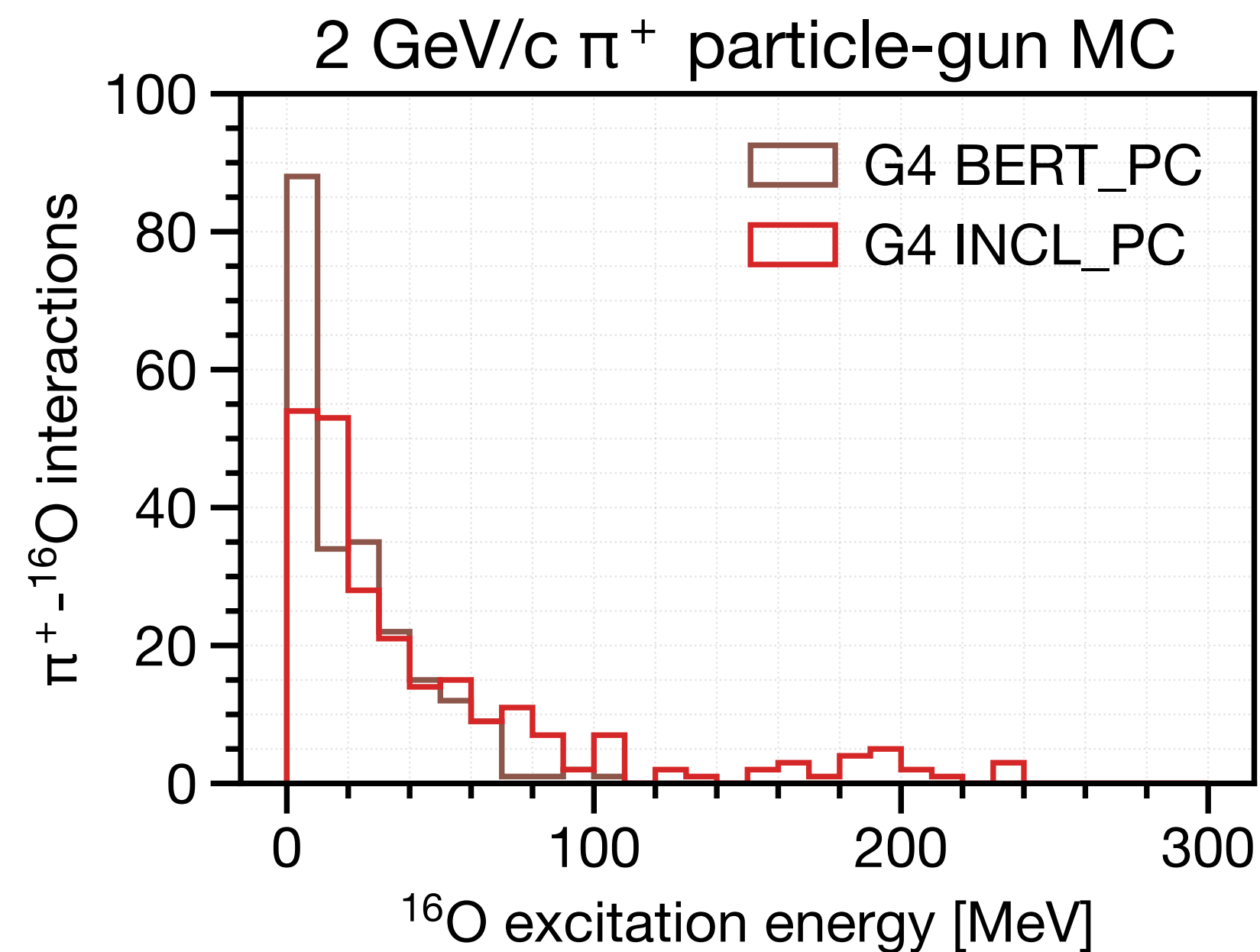
Fewer n through
de-excitation in INCL?

Fewer low-E π in INCL

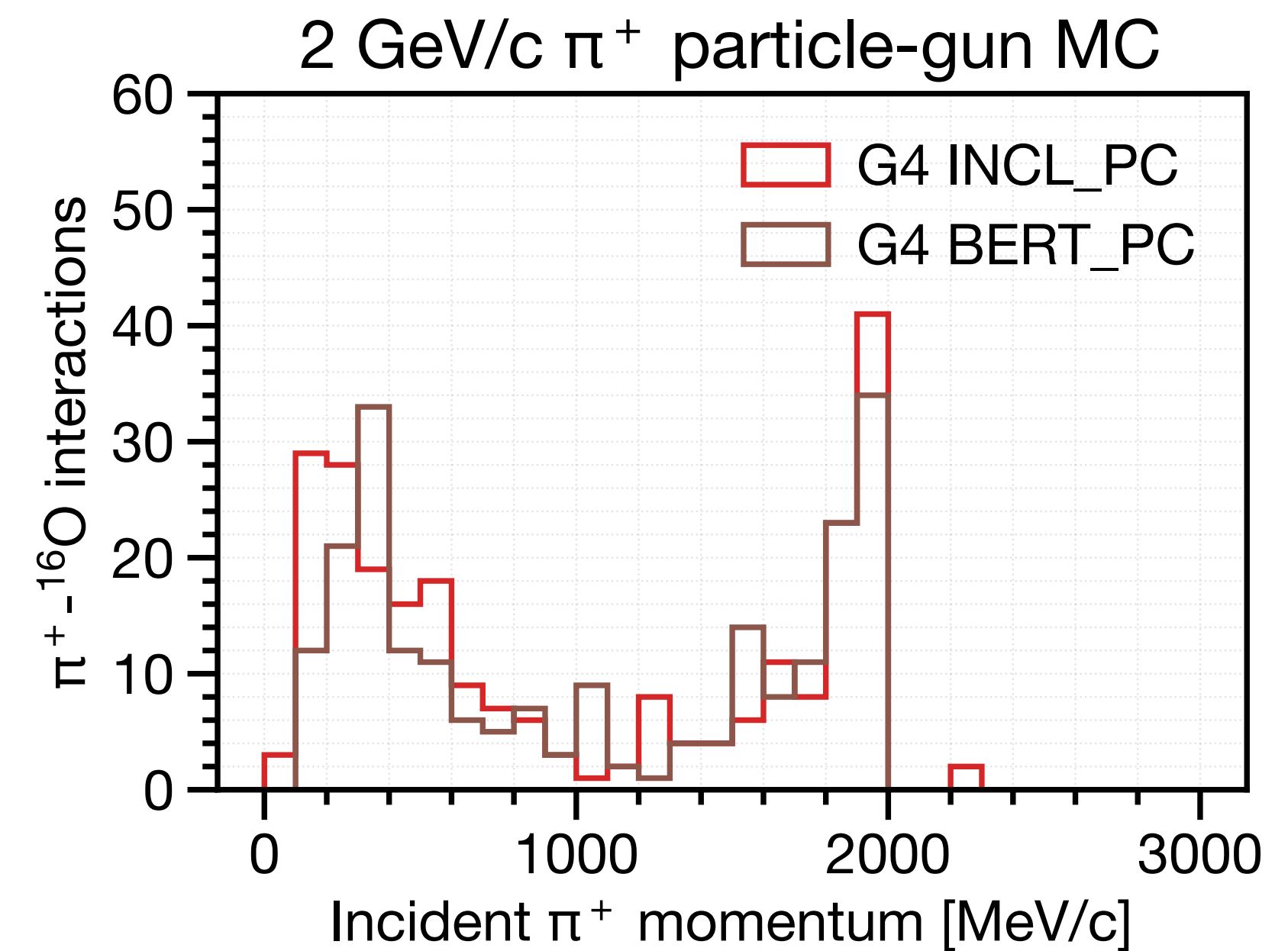
Geant4.10.5.p01

100 π^+ with momentum 2 GeV/c propagates through water

^{16}O excitation energy after π^+ cascade



Incident π^+ momentum



Bertini: many events with $E_{\text{ex}}=0$

INCL: long tail