
Target Studies for Pion Production



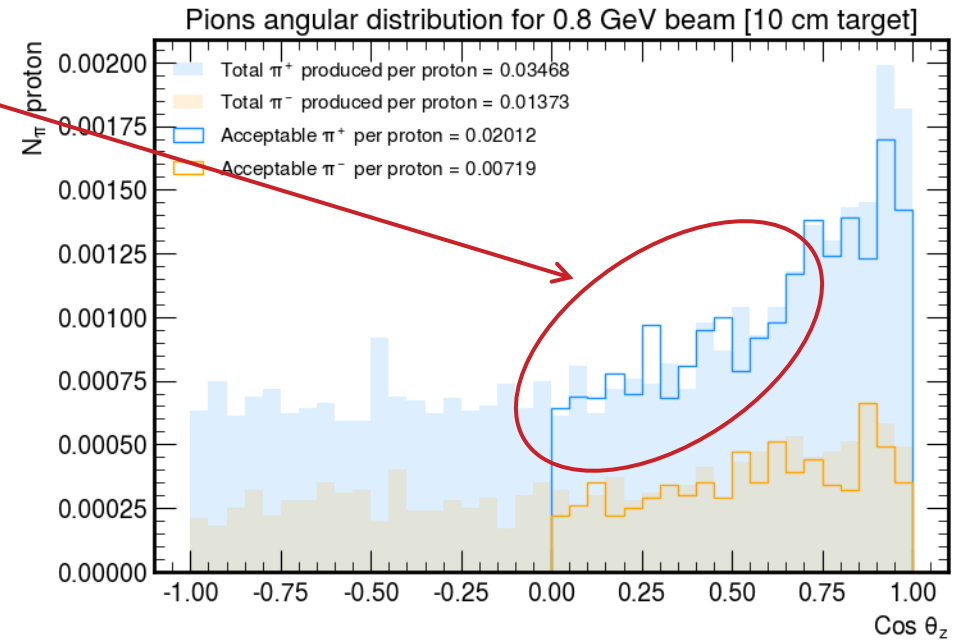
4/28/2025

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Shielding Module.
Target heads

Work in Progress...

→ Issues with the current code:



→ It turned out the USRBDX and USRYIELD measure angles differently:

→ In USRYIELD, angles are calculated with respect to beam orientation and NOT to the normal to the boundary

Work in Progress...

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- USRYIELD has two options... either score EMERGING particles or ENTERING particles.
 - EMERGING is what comes out of nuclear inelastic events
 - However, I couldn't find anything about ENTERING from the manual... So, I decided to test using it.
 - Well, ENTERING is not the same as crossing a boundary. When I ran USRYIELD-ENTERING and USRBDX at the same time, I thought that I should the recorded particles would be similar. For a simulation of 100 primaries fired onto a Nickel target, USRBDX scored ~150 pions and USRYIELD-ENTERING scored 8 pions with energies that could not be traced back to the pions that were produced inside the target.
 - Bottom line:
 - USRYIELD-ENTERING is doing something, but I am not sure what it is!
 - I am still working on fixing this issue...

Work in Progress...

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- Here are the documents I looked at...
 - [09_Advanced_scoring_2025_Advanced_ALBA.pdf](#)
 - <https://fluka-forum.web.cern.ch/t/what-is-the-physical-meaning-of-particle-yield/3067>
 - https://indico.cern.ch/event/956531/contributions/4020253/attachments/2119668/3567188/10_Scoring_II_2020_online.pdf
 - <https://fluka-forum.web.cern.ch/t/usryield-output-normalisation/7609>
 - https://flukafiles.web.cern.ch/manual/chapters/description_input/description_options/usryield.html#usryield
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 - https://indico.cern.ch/event/956531/contributions/4020257/attachments/2118690/3565160/08_Scoring_I_2020_online.pdf