Acceptance Study Status

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Acceptance Study

- Check the acceptance with elastic cross-section
- Since we have pretty enough data, we could only use the central region of the acceptance to calculate the cross-section
- Elastic cross-section is well-known so we should be able to compare the calculated cross-section with different cut of the acceptance to give a check

\[
\sigma_0 = \frac{P_S N}{Q_e (\rho \Delta Z) T_L \epsilon_{\text{det}}} \frac{1}{\Delta \Omega \Delta E' A}
\]

- Initial angle and momentum coverage in simulation
- Ratio of accepted events and total events
Acceptance Study

-0.005 < $\phi$ < 0.005

-0.015 < $\phi$ < -0.005

0.005 < $\phi$ < 0.015

- Problem:
  - “Super-elastic” events in small phi angle
  - Dilution from excited states of the carbon
Acceptance Study

-0.015 < \phi < -0.005

y vs dp

-0.01 < y < 0.025

• y cut: -0.01 < y < 0.025
Acceptance Study

-0.005 < phi < 0.005

-0.015 < phi < -0.005

0.005 < phi < 0.015

- Fit the elastic spectrum:
  - Elastic peak: Landau-Gaussian function
  - 1st and 2nd excited peak: Gaussian function
  - Background
Acceptance Study

-0.005 < \phi < 0.005

-0.015 < \phi < -0.005

0.005 < \phi < 0.015

• Integral of elastic peak (0–6MeV)
  • \phi = -0.01: 4429, 4036
  • \phi = 0.00: 1625, 1598
  • \phi = 0.01: 573, 536