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Subject: Update of MCEEP simulation for $^3He(e,e'p)$ quasielastic scattering, comparison between 2 mm (point) and 4 cm targets.
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Work Completed

(A) This is an update of MCEEP simulation for $^3He(e,e'p)$ quasielastic scattering. The $^3He(e,e'p)$ cross section $\frac{\mathrm{d}\sigma}{\mathrm{d}\Omega_e \mathrm{d}\Omega_p}$ for 2 mm (point) and 4 cm target lengths have been simulated, and plotted with respect to missing energy ϵ_m. A comparison hass been made (see Figure 1, using 10^6 events).

(B) The cut in out-of-plane angle ϕ, in-plane angle θ, and z_{react} are the same as that we used in the last report for missing momentum.

(C) We ignore the negative difference around $\epsilon_m \sim 7.82MeV$ because it is caused by the artificial cut-off in missing mass in MCEEP. And the difference at $\epsilon_m > 20MeV$ should be ignored too because the cross section in that region is very small.

(D) Our conclusion is that the relative difference in cross section is within $-2\% \sim 3\%$, e.g.

$$-2\% < \frac{(\frac{\mathrm{d}\sigma}{\mathrm{d}\Omega_e \mathrm{d}\Omega_p})_{4cm} - (\frac{\mathrm{d}\sigma}{\mathrm{d}\Omega_e \mathrm{d}\Omega_p})_{2mm}}{(\frac{\mathrm{d}\sigma}{\mathrm{d}\Omega_e \mathrm{d}\Omega_p})_{2mm}} < 3\%$$

Figure 1: $\frac{\mathrm{d}\sigma}{\mathrm{d}\Omega_e \mathrm{d}\Omega_p}$ vs. ϵ_m, comparison between 2 mm and 4 cm targets.