MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Laboratory for Nuclear Science

To: Shalev Gilad, Zilu Zhou, David Rowntree
From: Xiaochao Zheng
Subject: MCEEP simulation for $^3He(e,e'p)$ quasielastic scattering, comparison between 2 mm(point) and 4 cm targets.
Date: June 07, 2000

Work Completed:

(A) The $^3He(e,e'p)$ (*two body breakup*) cross section $\frac{d^5\sigma}{d\Omega_e d\Omega_p dE_e}$ for 2 mm (point) and 4 cm target lengths have been simulated by MCEEP, and plotted with respect to missing momentum p_m. A comparison has been made (see Figure 1, using 10^6 events);
The peak in cross section difference around 50 MeV/c is originated from no-matching area in $Q^2-\omega$ region.

(B) The $^3He(e,e'p)$ (*continuum*) cross section $\frac{d^5\sigma}{d\Omega_e d\Omega_p dE_e}$ for 2 mm (point) and 4 cm target lengths have been simulated by MCEEP, and a comparison has been made after a cut in missing energy $7 < E_m < 20$ MeV (see Figure 2, using 10^7 events);

(C) Cut used in the data analysis (same as that used by Richard Florizone):

spectrometer	particle	in-plane angle θ	out-of-plane angle ϕ	ref.
A	electron	< 75 mrad	< 90 mrad	p.117
B	proton	< 50 mrad	< 60 mrad	p.117

variable	value	ref.
z_{react}	(-2,2)cm	p.121
missing mass E_m	(4.0, 7.0) MeV	p.164

ref.: in thesis of Richard Florizone.
note: the original target length in the experiment is 8 cm.

List of Figures:

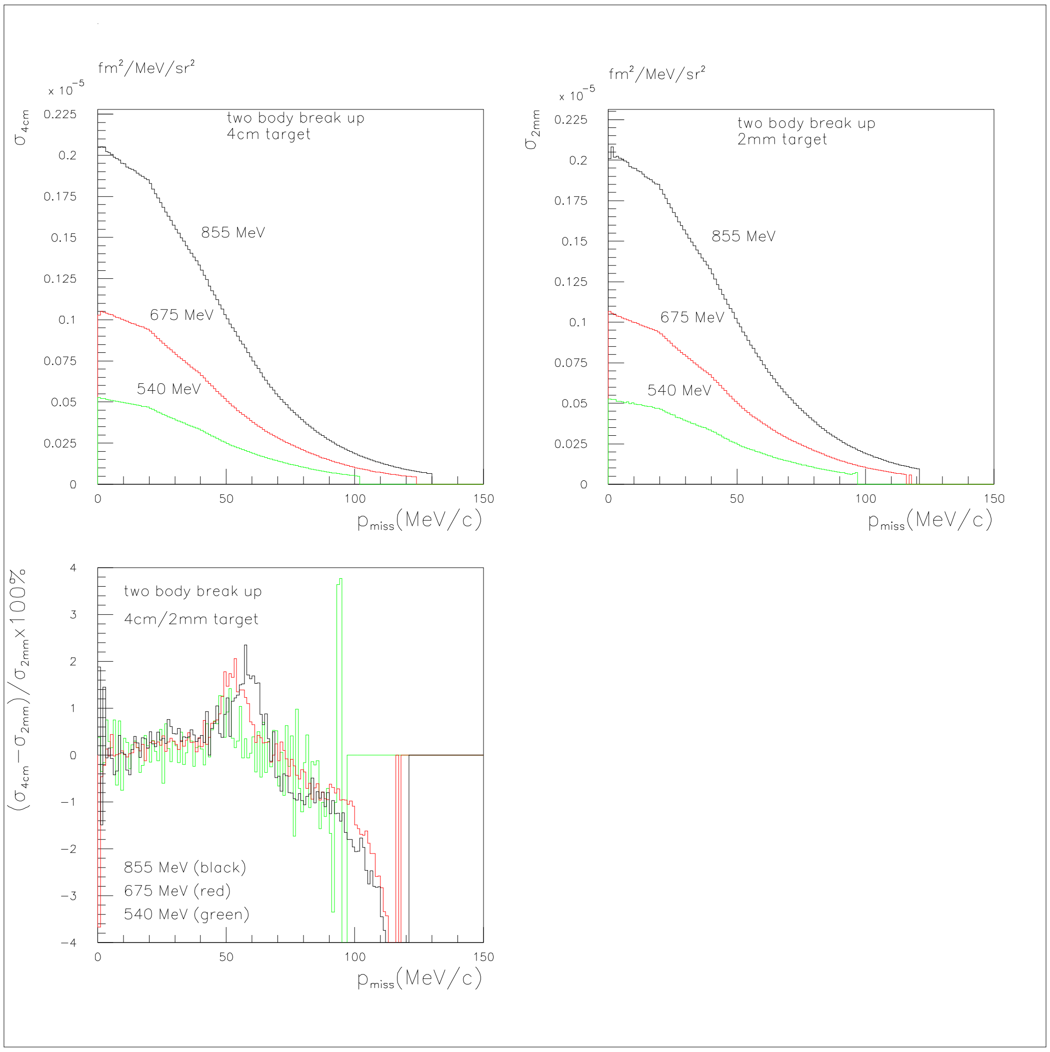

Figure 1: Comparison of cross section between 4 cm and 2 mm targets, two-body breakup

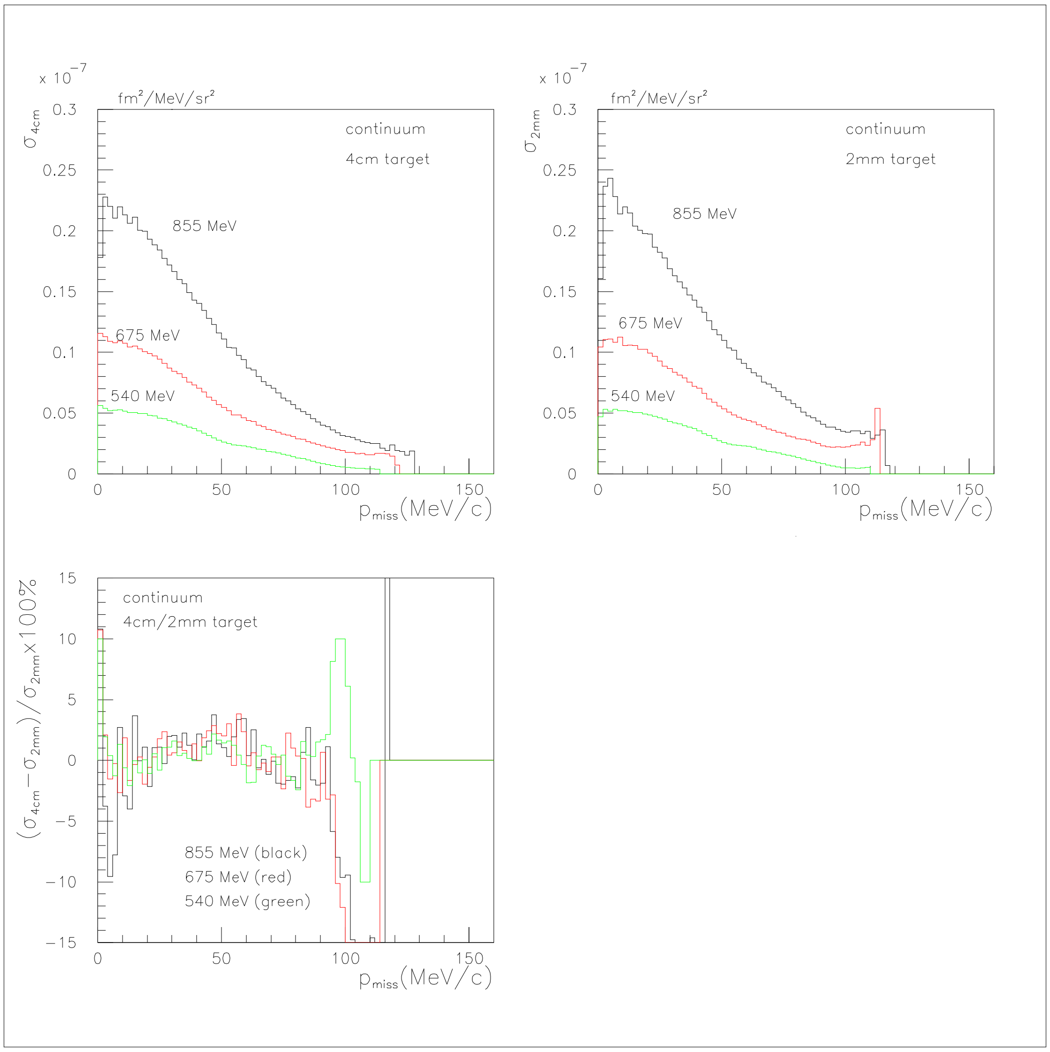

Figure 2: Comparison of cross section between 4 cm and 2 mm targets, continuum