

CLAS Note 93-010

Revised 9/28/94

Data Compilation for Δ Electroproduction in Nuclei

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Graphs of high quality data for inclusive electron scattering from nuclei that include both quasielastic and $\Delta(1232)$ peaks are presented.

The following is a compilation of inclusive electron scattering data in the quasielastic and $\Delta(1232)$ regions from various experiments conducted at MIT-Bates, DESY, Saclay and SLAC. References are given for all data presented. The data were collected at various energies and angles for nuclei including ^3H , ^3He , ^4He , Li, Be, C, O, Al, Fe, and W. The range of the four-momentum transfer at the delta peak, Q^2 , is approximately .05 to 1 $(\text{GeV}/c)^2$. These data are graphed as Cross Section per Nucleon, in nb/MeV-sr, against Invariant Mass, in MeV. Because data from various experiments in different formats were used, many had to be converted from energy loss, ω , or final energy, E_f , to invariant mass, $(W^2 = M^2 + 2M\omega - Q^2)$. The cross sections also had to be scaled to produce cross sections per nucleon. A total of 69 spectra are plotted.

These data have been selected because they have clearly defined quasielastic and Δ peaks as well as good energy resolution and high statistical accuracy. The data is arranged within each target group by increasing Q^2 at the Δ peak. Possible uses for this compilation include providing calibration data for the CLAS detector at CEBAF.

All cross sections are available electronically from R. M. Sealock (email address: sealock@virginia.edu).

Acknowledgements: We would like to thank Pavel Degtyarenko and Tim Ciciarelli for help in finding errors.

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References

 $^3\text{H}, ^3\text{He}$

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 ^3He

2. D. B. Day et al., *Phys. Rev. Lett.* **43**, (1979) 1143

 ^3He

3. C. Marchand et al., *Phys Lett.* **153B**, (1985) 29

 $^3\text{He}, ^4\text{He}, \text{Fe}$

4. J. P. Chen et al., *Phys Rev. Lett.* **66**, (1991) 1283
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7. J. S. O'Connell et al., *Phys Rev. Lett.* **53**, (1984) 1627
8. J. S. O'Connell et al., *Phys Rev.* **C35**, (1987) 1063

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9. R. M. Sealock et al., *Phys. Rev. Lett.* **62**, (1989) 1350 and R. M. Sealock, private communication

 $\text{Li}, \text{C}, \text{Al}$

10. U. Glawe et al., *Phys. Lett.* **89B**, (1979) 44 and
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 C

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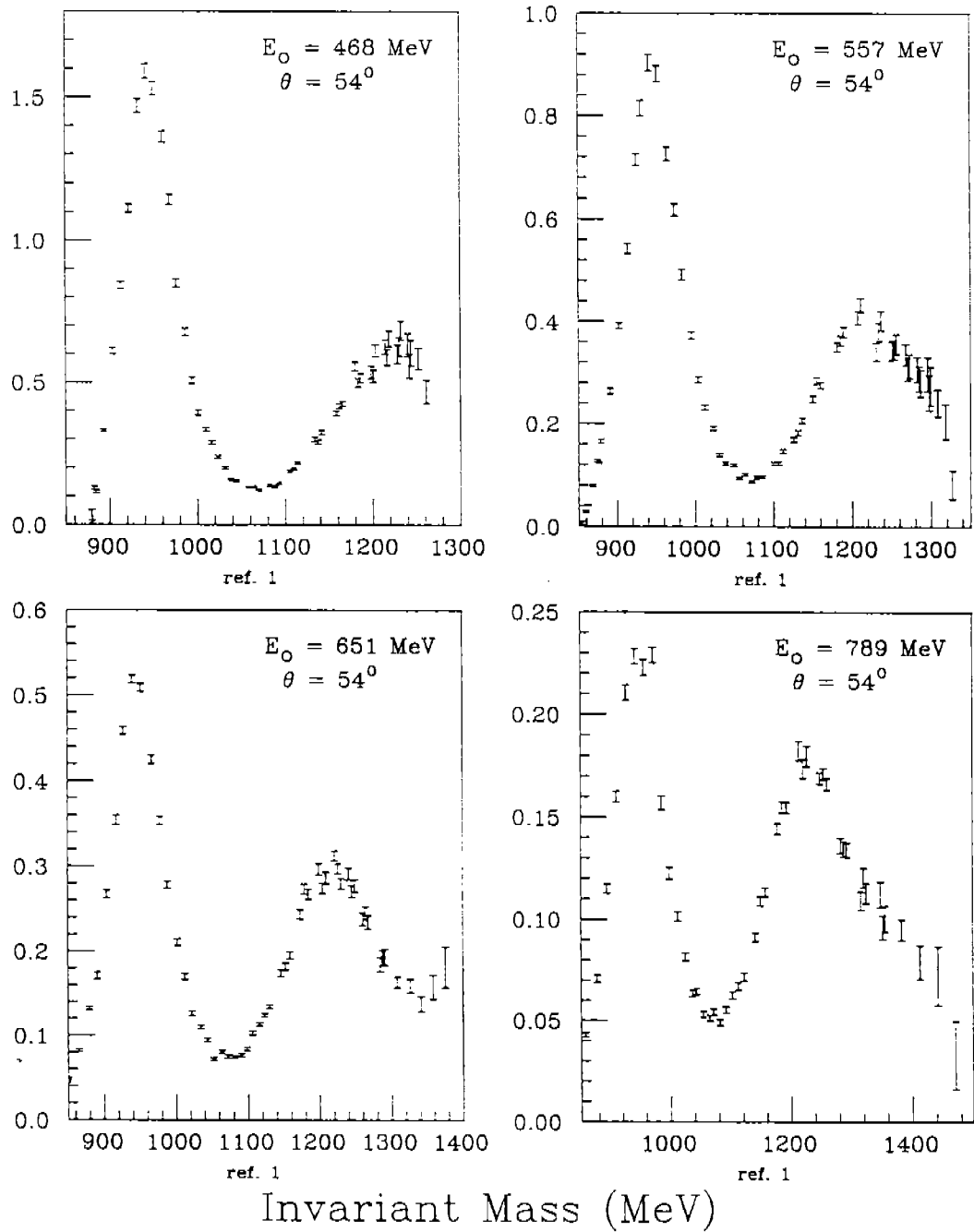
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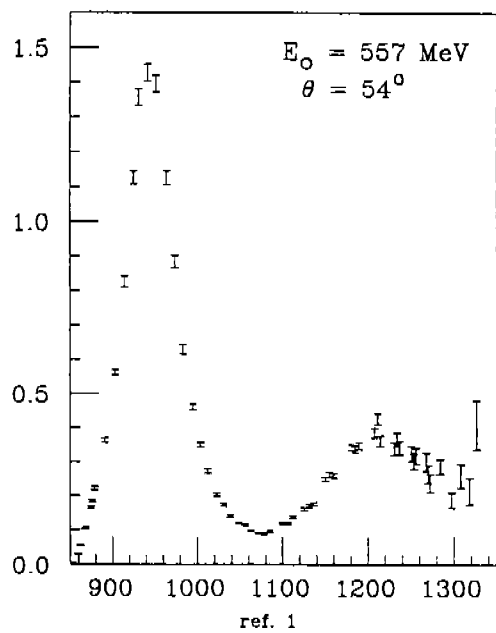
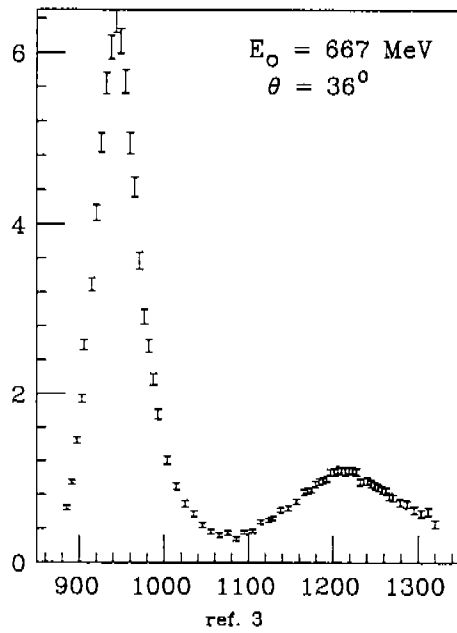
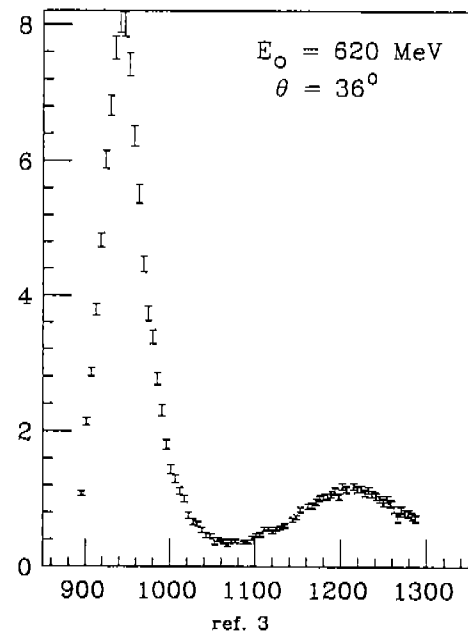
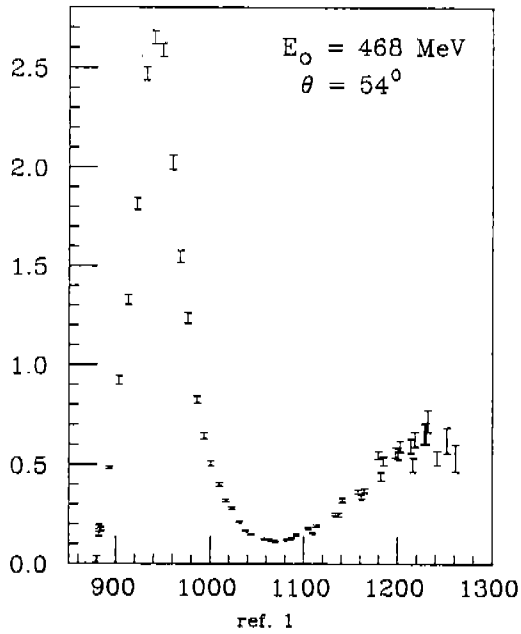
${}^3\text{H} (e, e')$

Cross Section Per Nucleon (nb/MeV-sr-A)



${}^3\text{He} (e, e')$

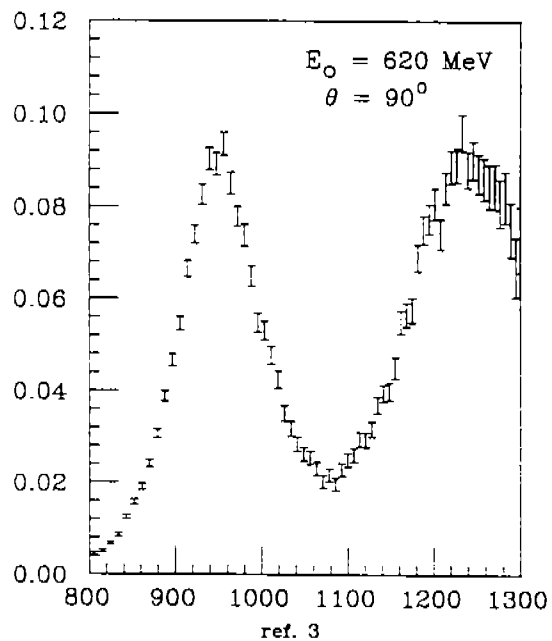
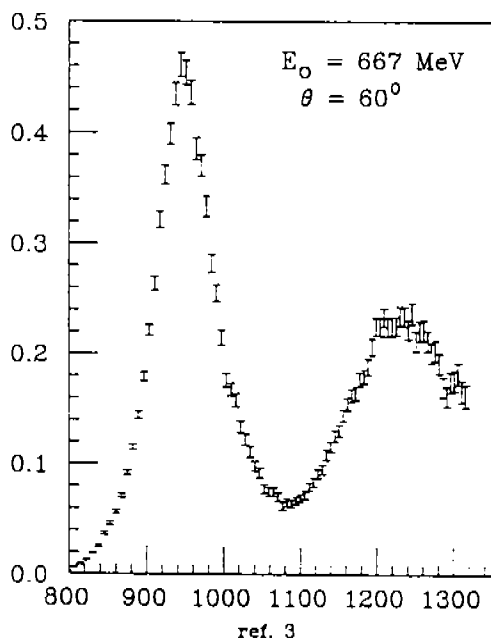
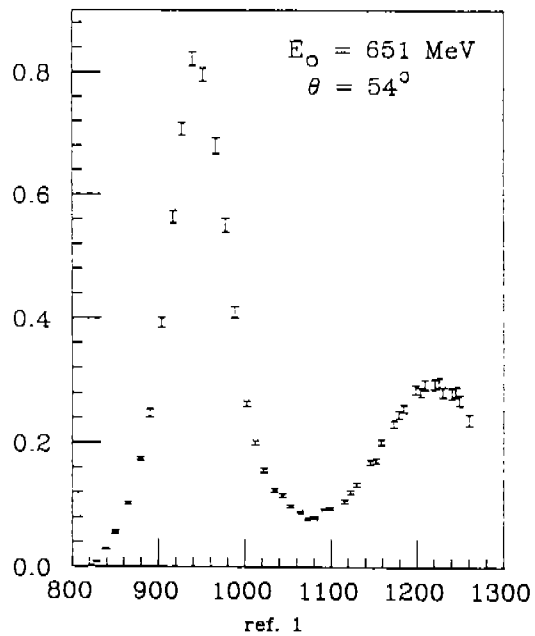
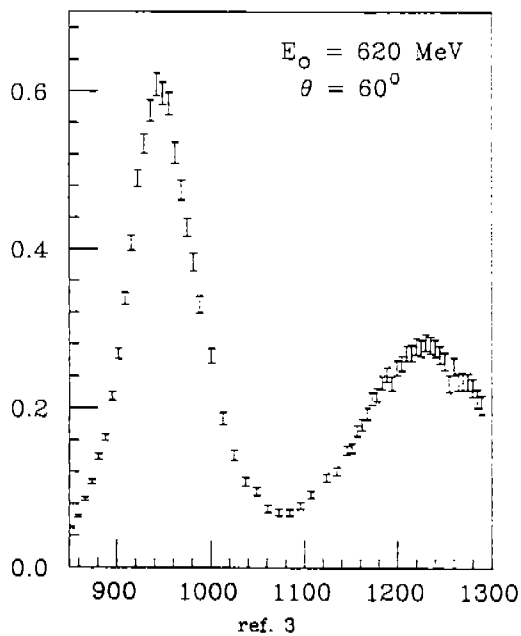
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

${}^3\text{He} (e, e')$

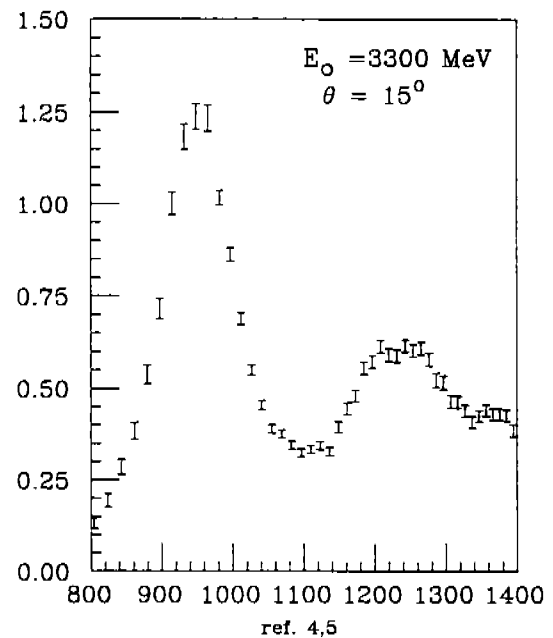
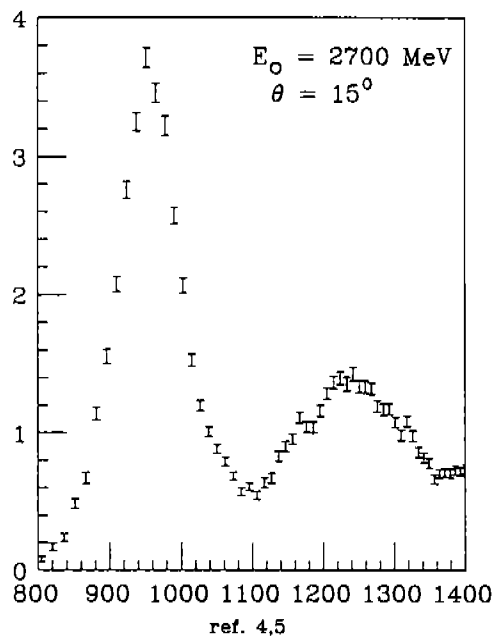
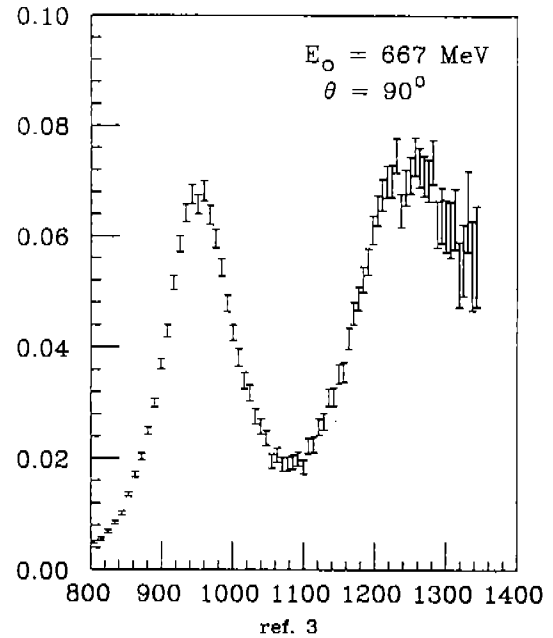
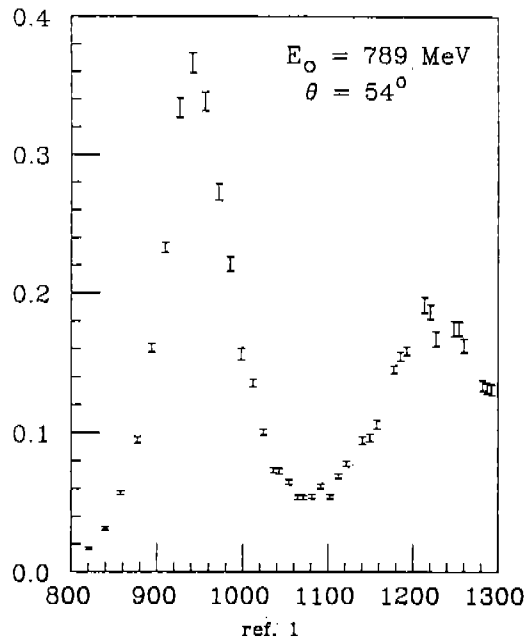
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

Cross Section Per Nucleon (nb/MeV-sr-A)

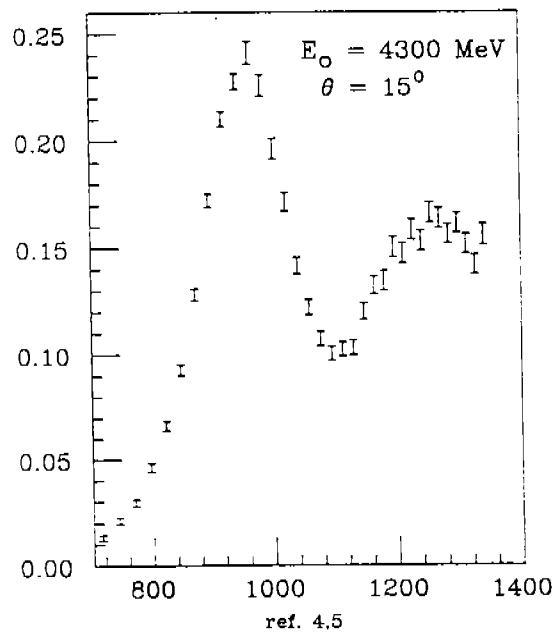
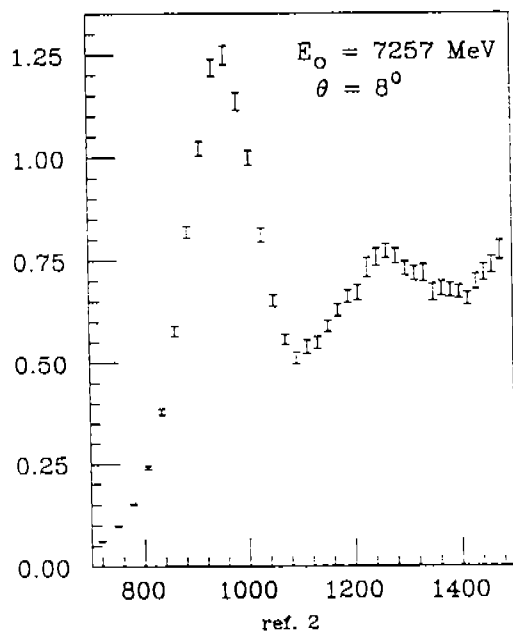
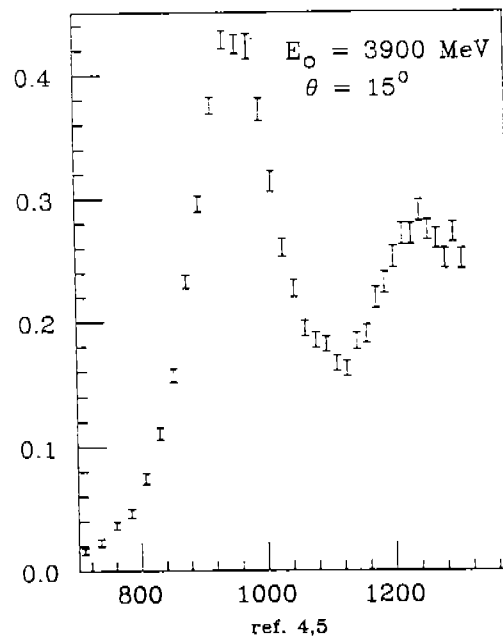
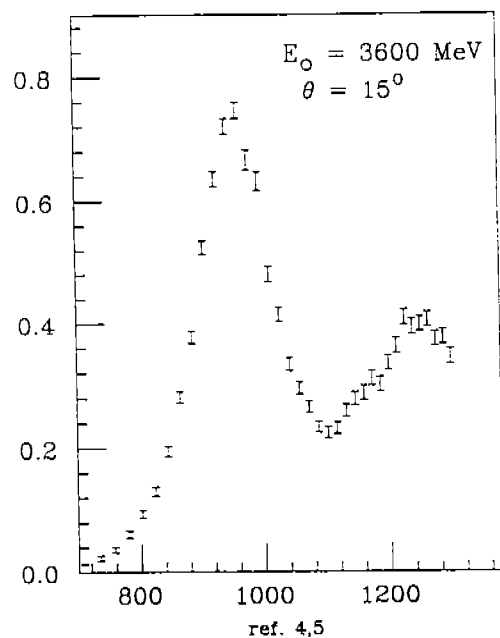
$^3\text{He} (e, e')$



Invariant Mass (MeV)

${}^3\text{He} (e, e')$

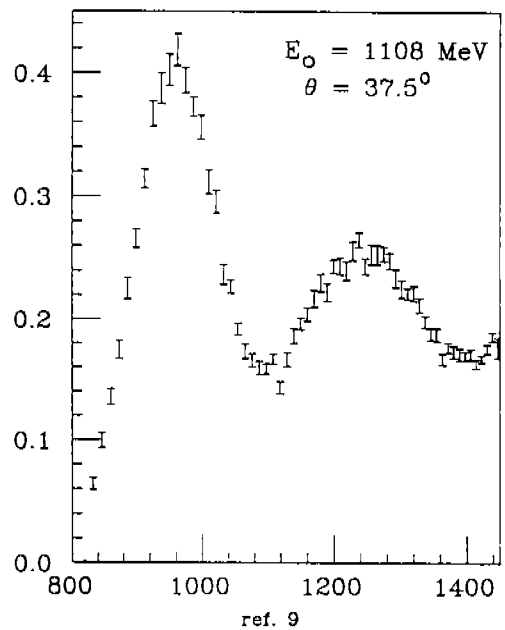
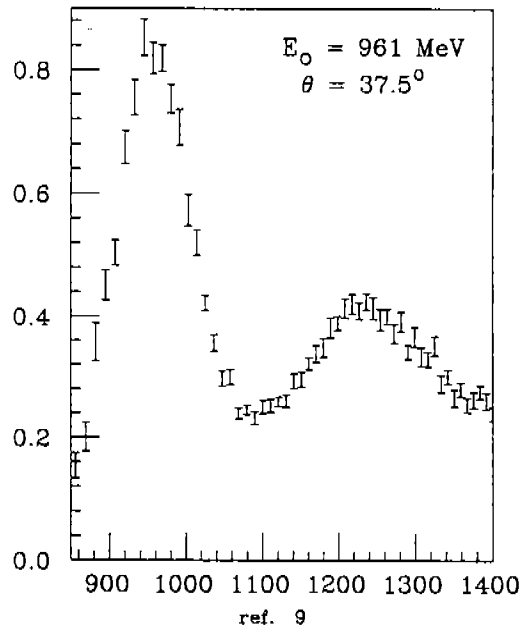
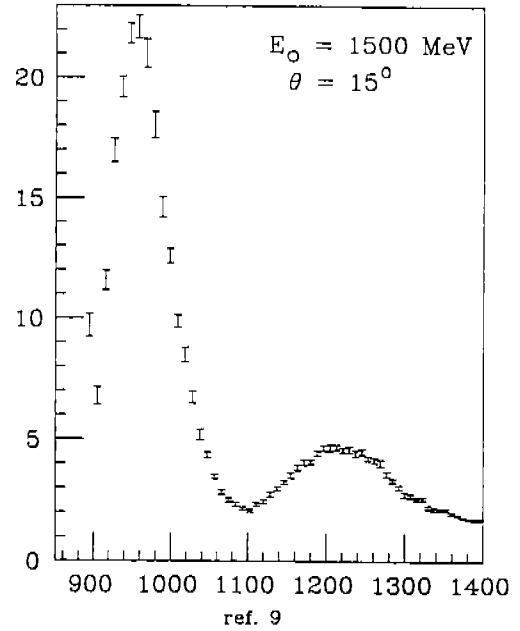
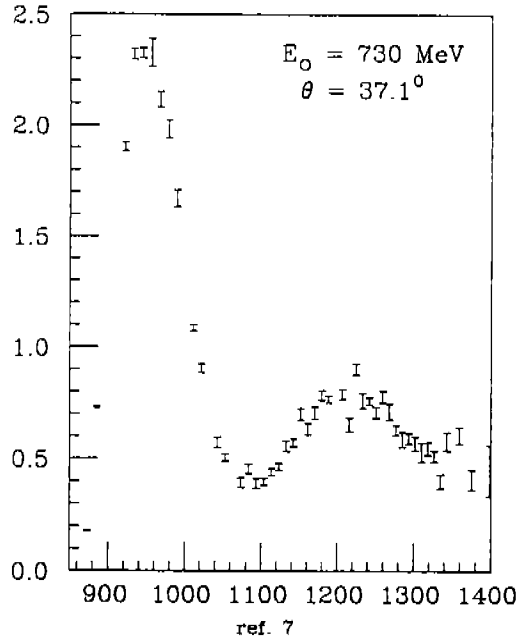
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^4\text{He} (e, e')$

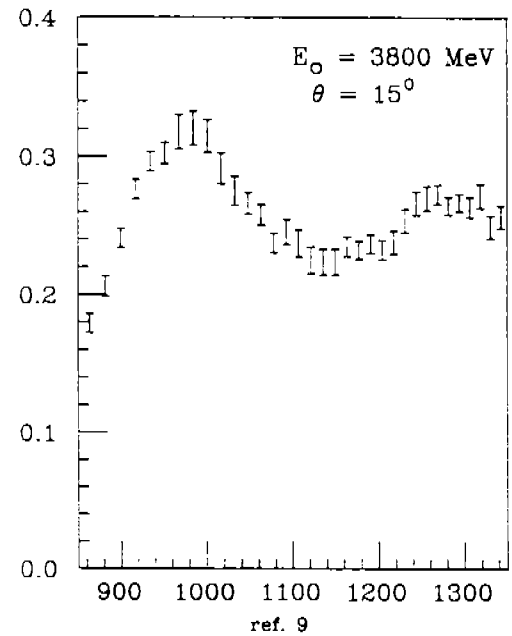
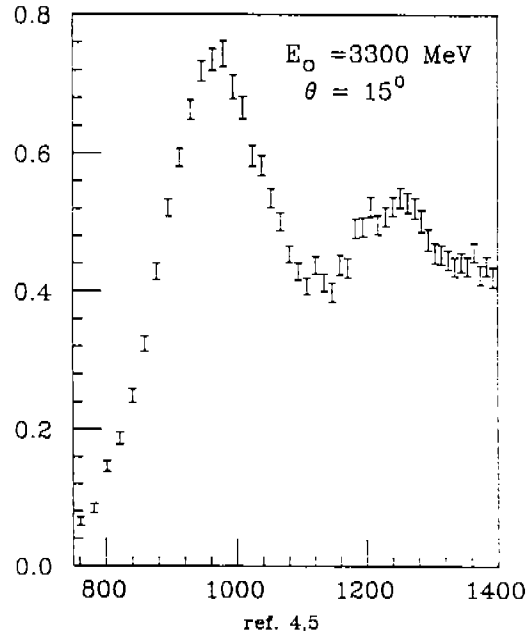
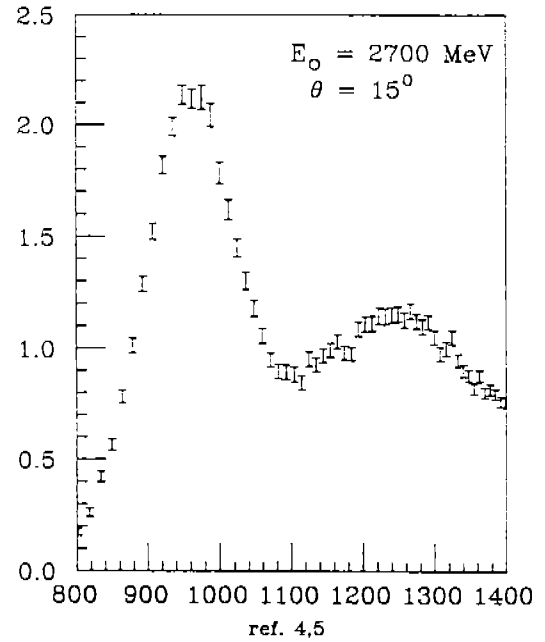
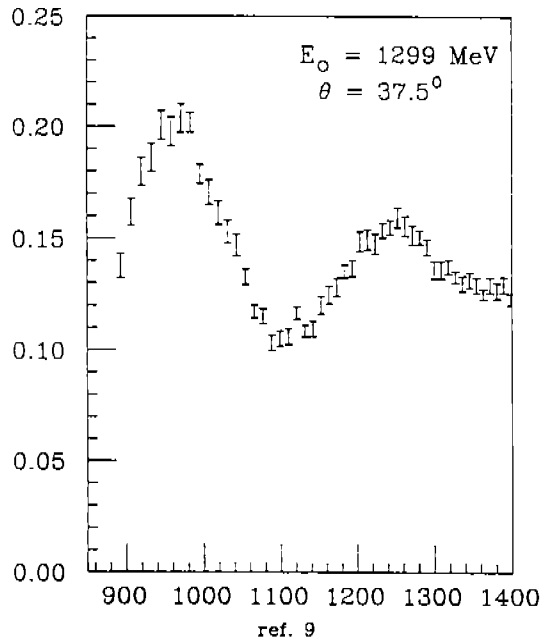
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

Cross Section Per Nucleon (nb/MeV-sr-A)

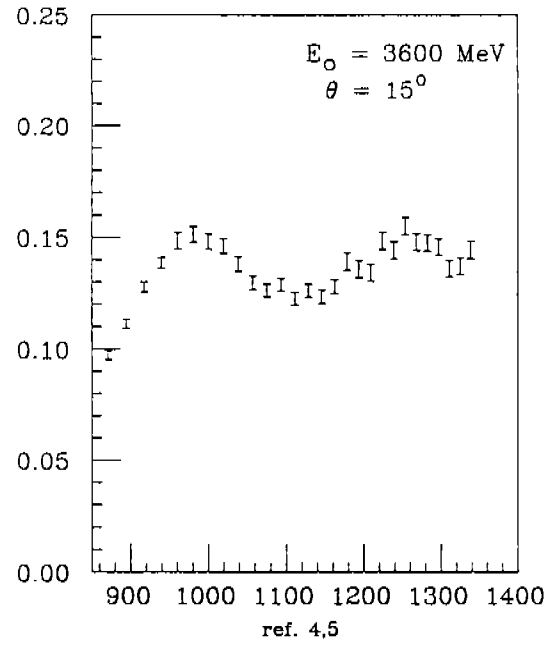
${}^4\text{He} (e, e')$



Invariant Mass (MeV)

${}^4\text{He} (e, e')$

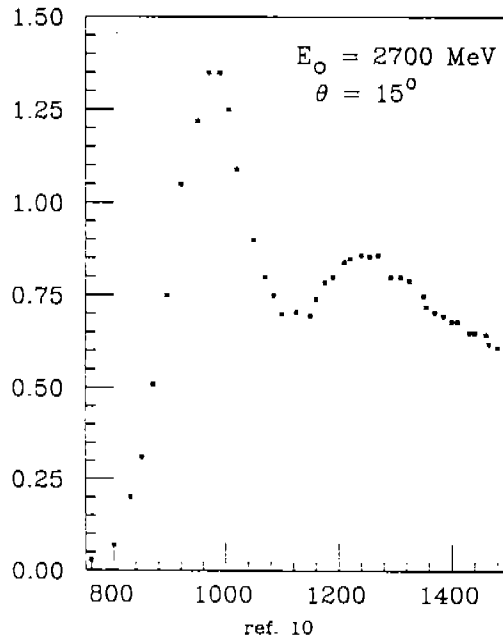
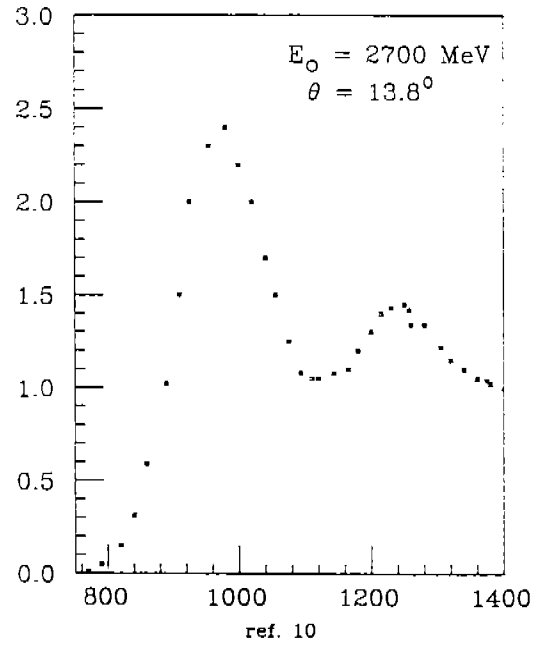
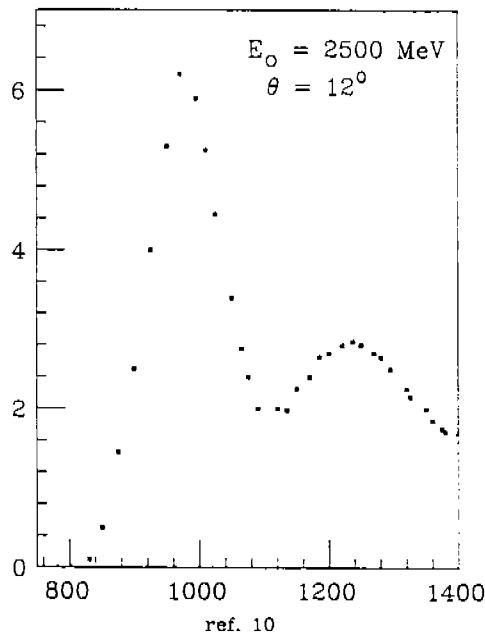
Cross Section Per Nucleon (nb/MeV--sr--A)



Invariant Mass (MeV)

${}^6\text{Li} (e, e')$

Cross Section Per Nucleon (nb/MeV-sr-A)

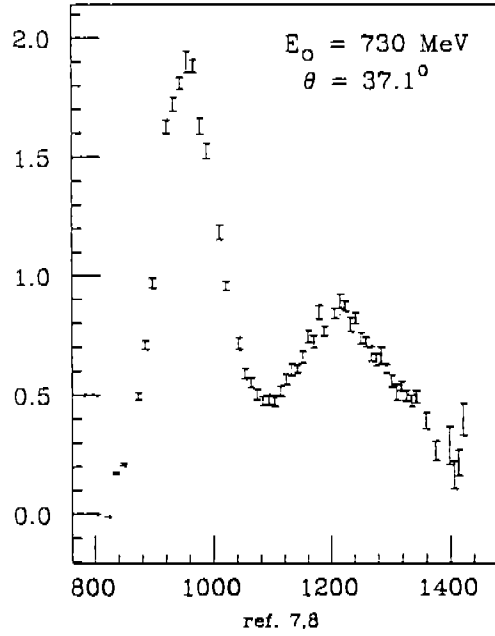


Invariant Mass (MeV)

[NOTE: error bars not included]

${}^9\text{Be} (e, e')$

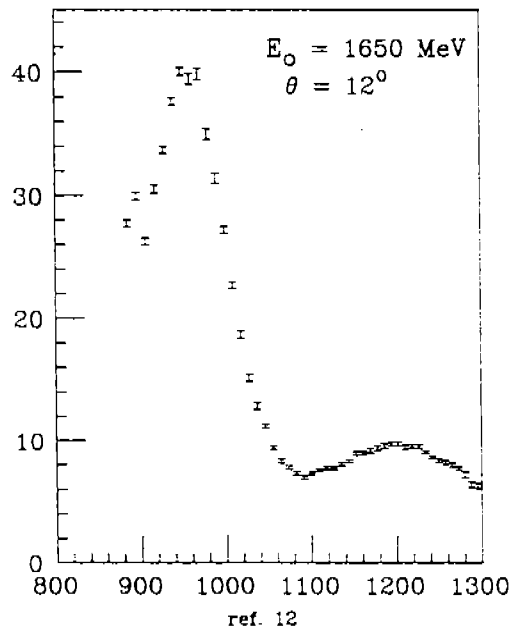
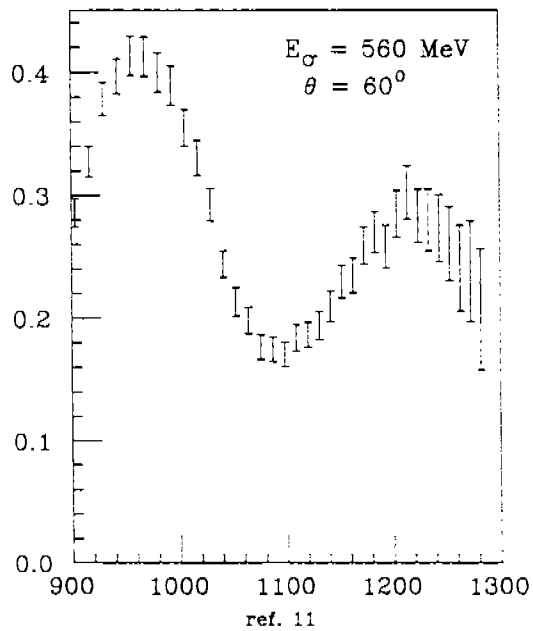
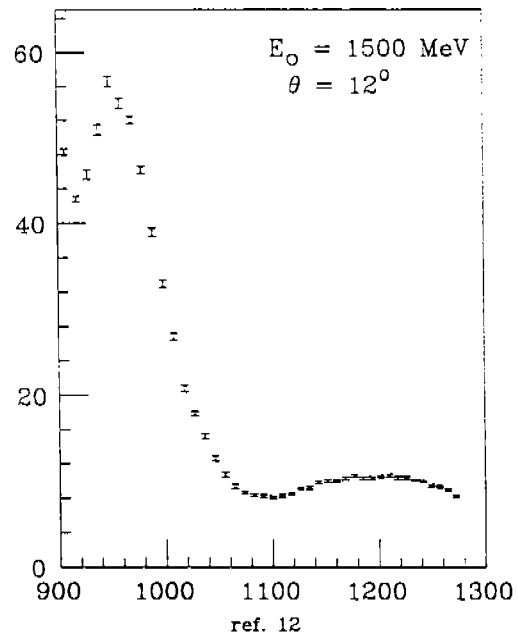
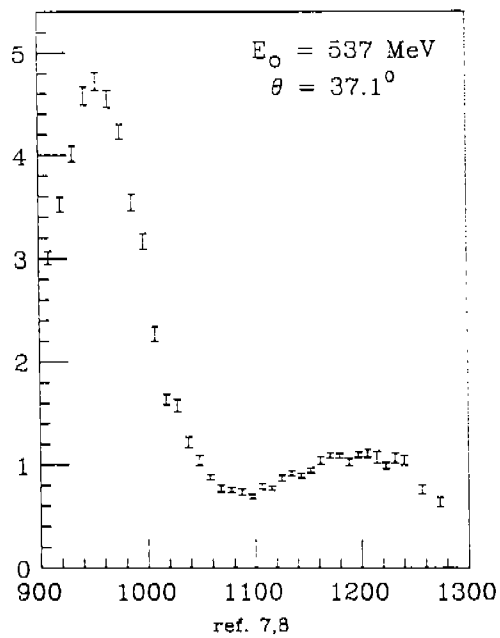
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{12}\text{C} (e, e')$

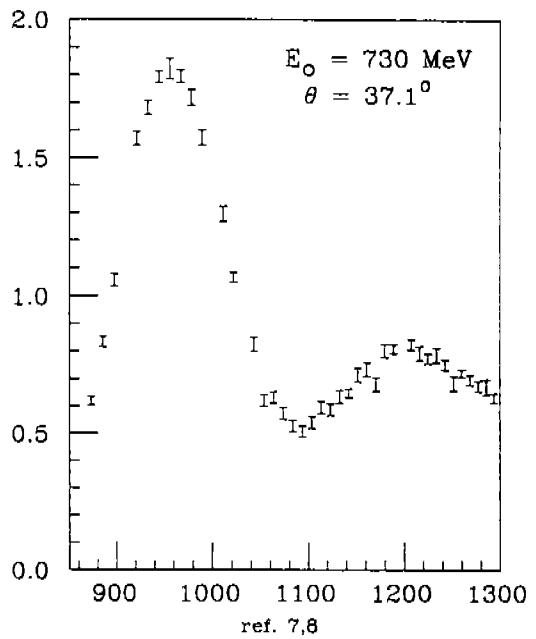
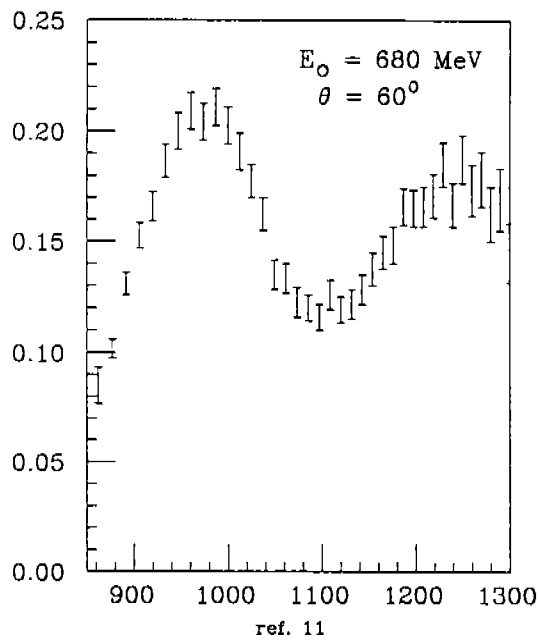
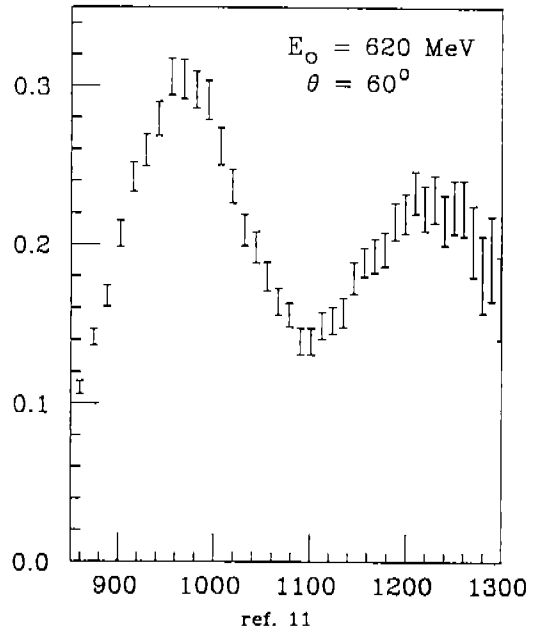
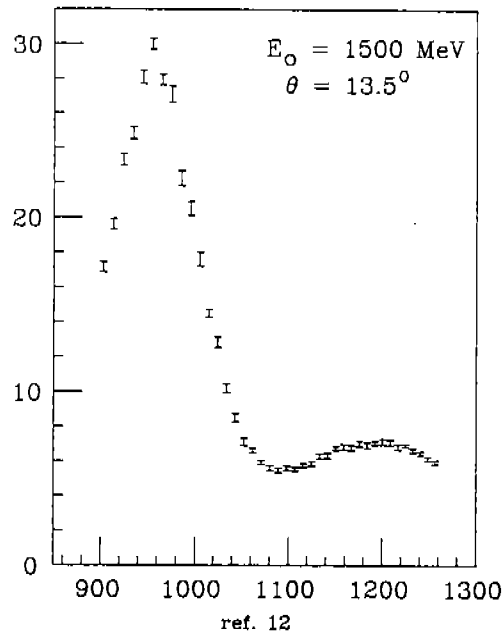
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{12}\text{C} (e, e')$

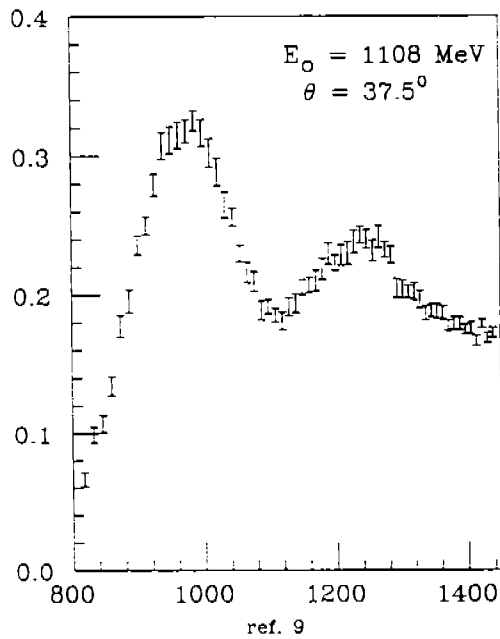
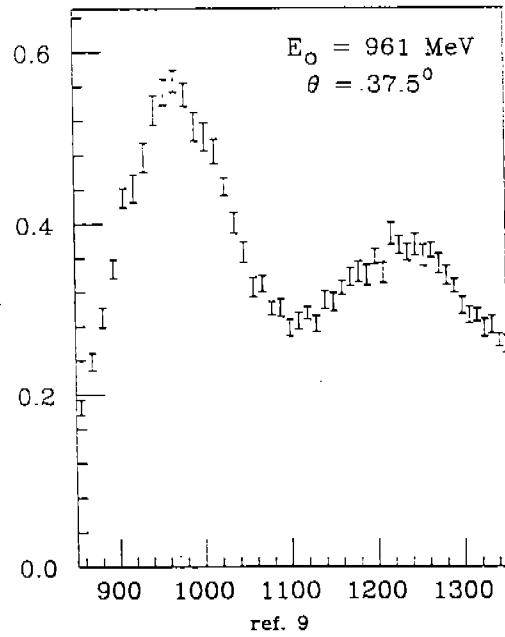
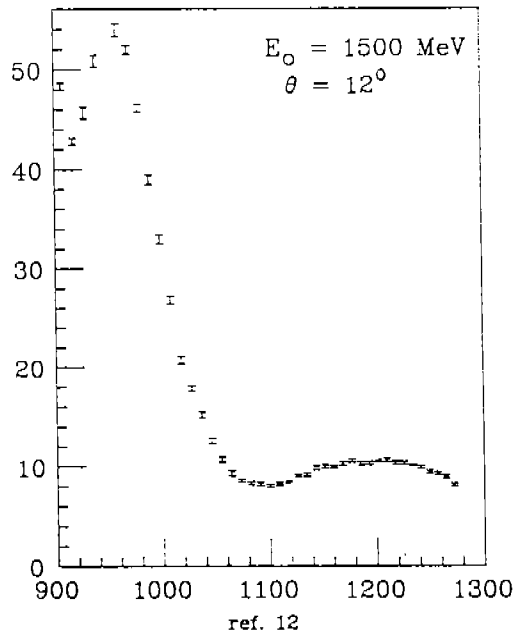
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{12}\text{C} (e, e')$

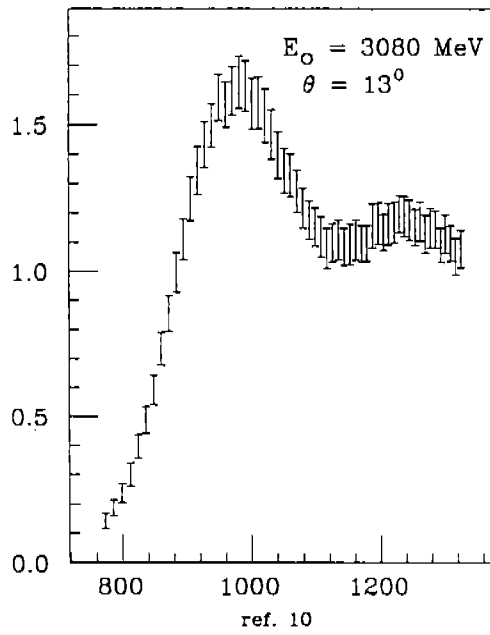
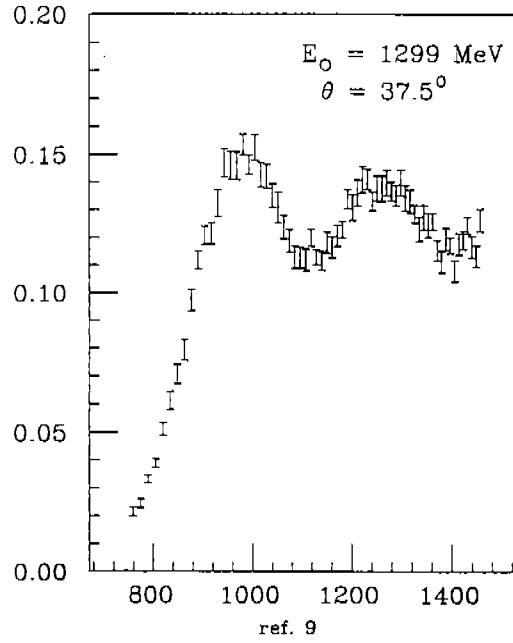
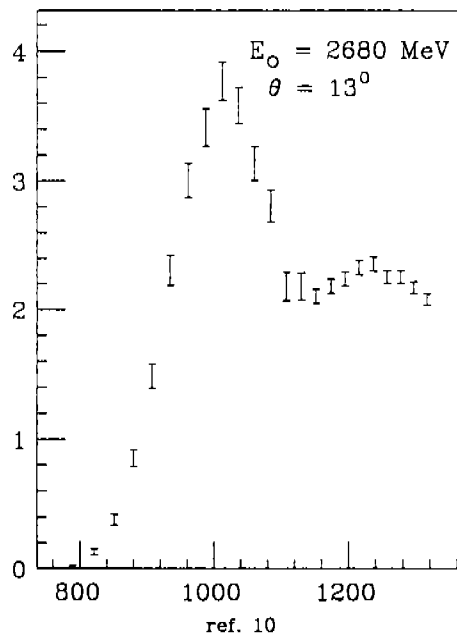
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

Cross Section Per Nucleon (nb/MeV-sr-A)

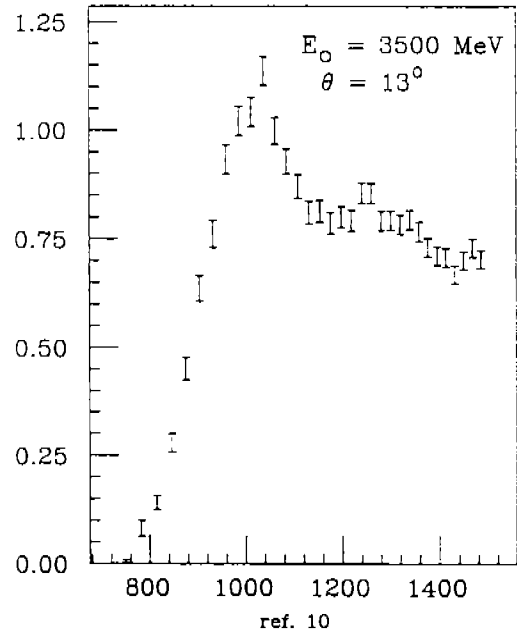
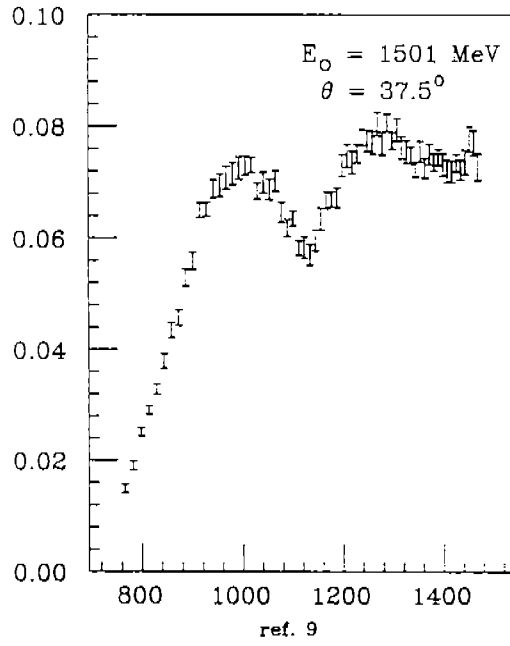
$^{12}\text{C} (e, e')$



Invariant Mass (MeV)

$^{12}\text{C} (e, e')$

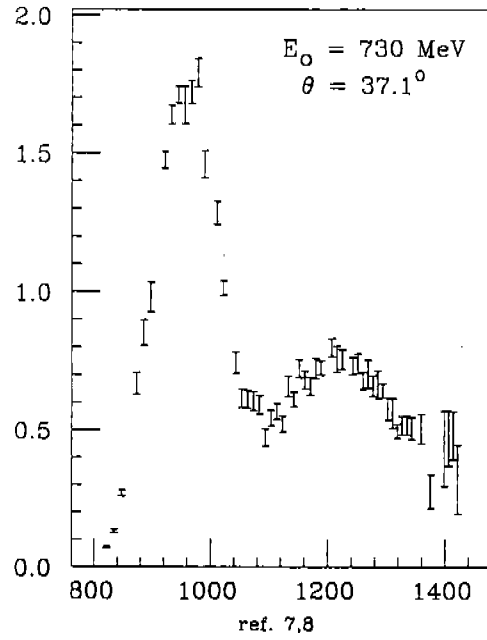
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{16}\text{O} (e, e')$

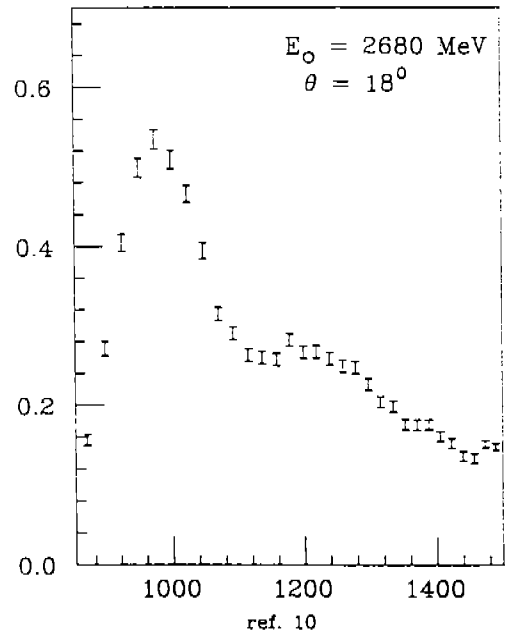
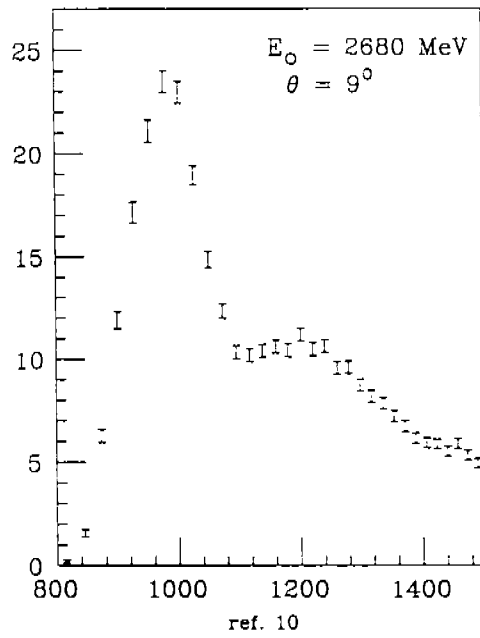
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{27}\text{Al} (e, e')$

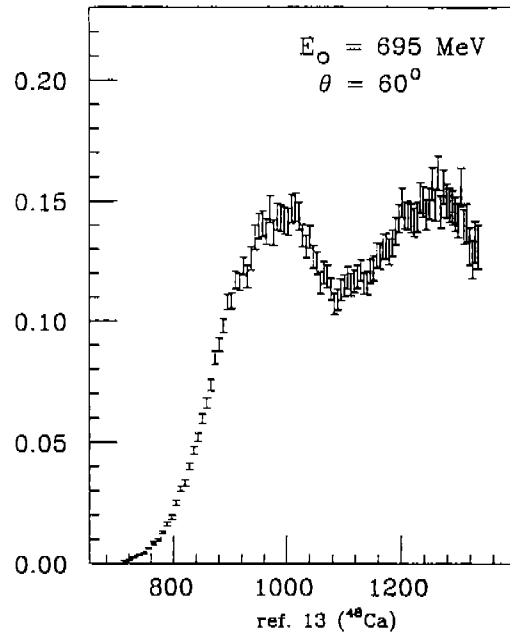
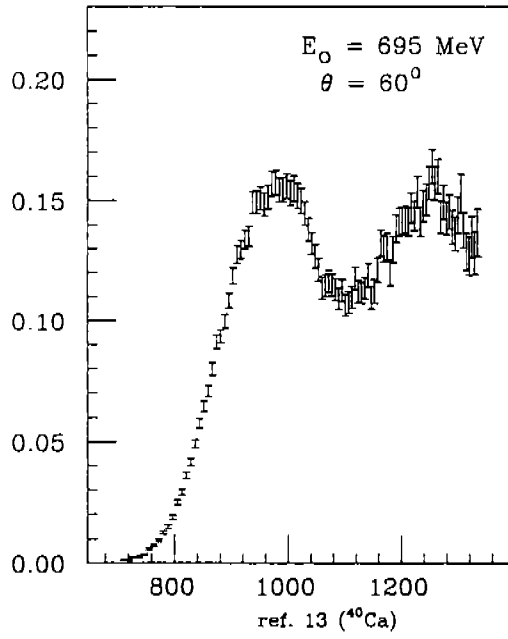
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{40,48}\text{Ca} (e, e')$

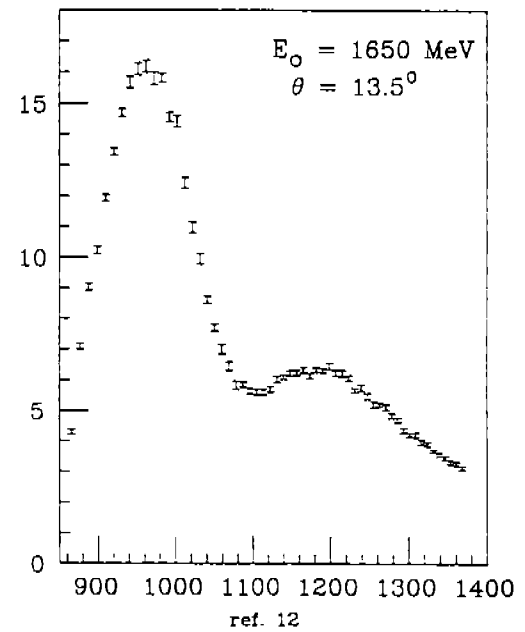
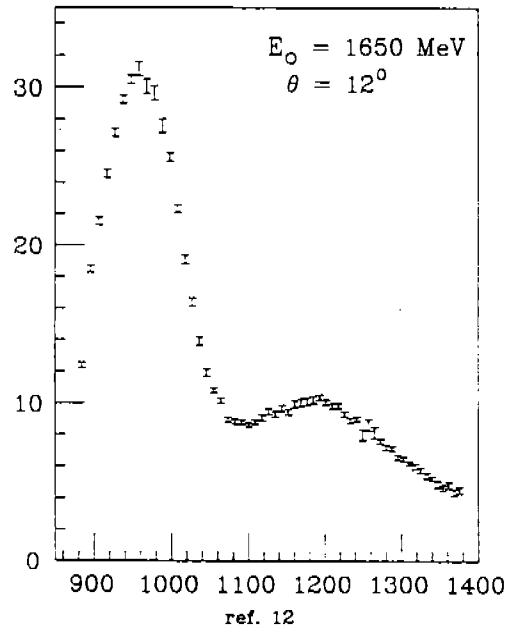
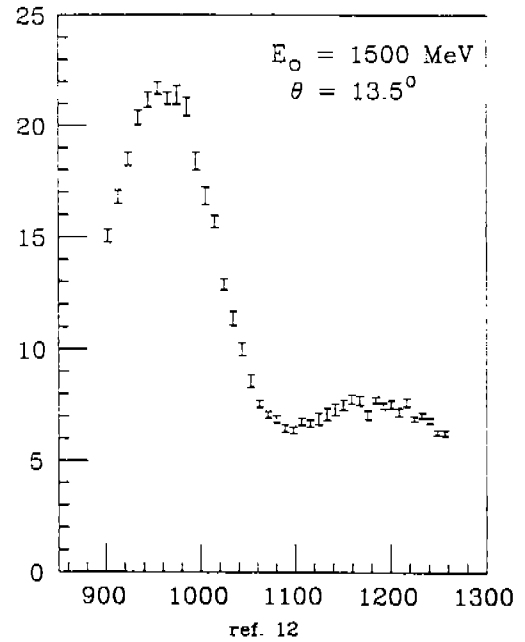
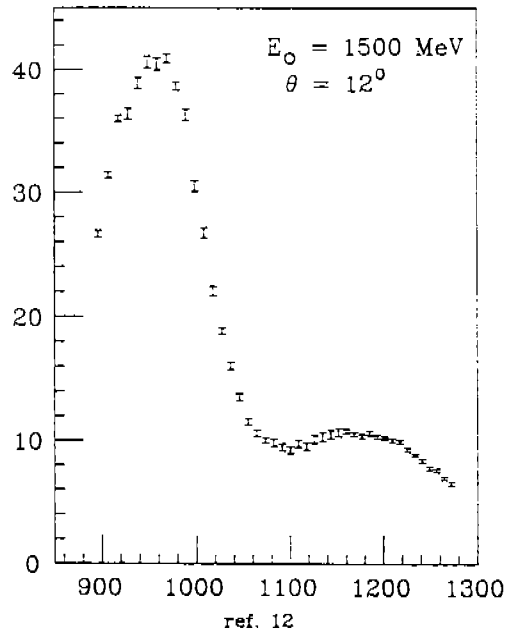
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{56}\text{Fe} (e, e')$

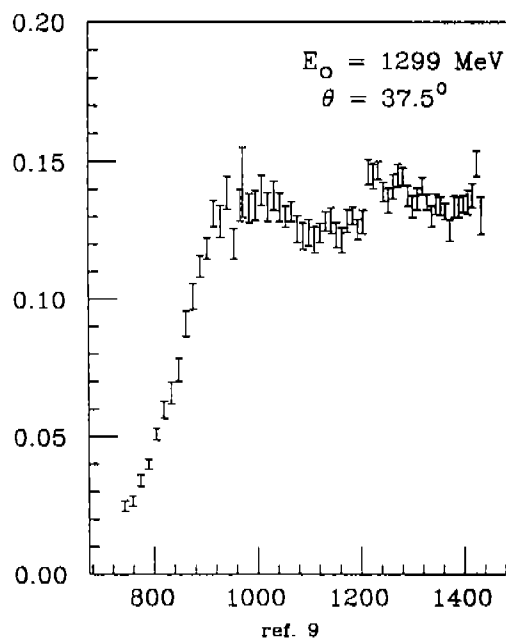
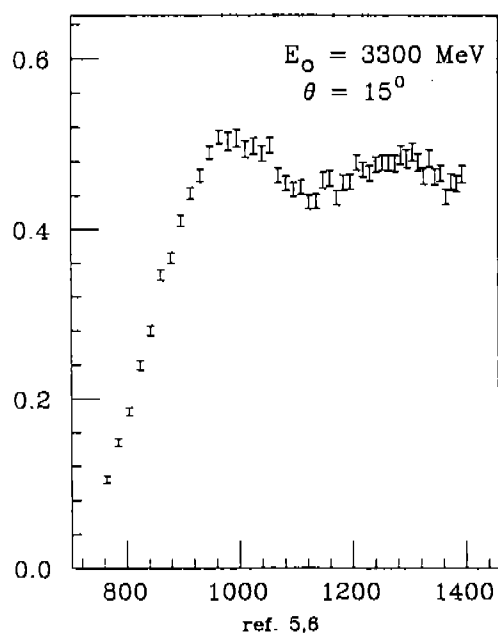
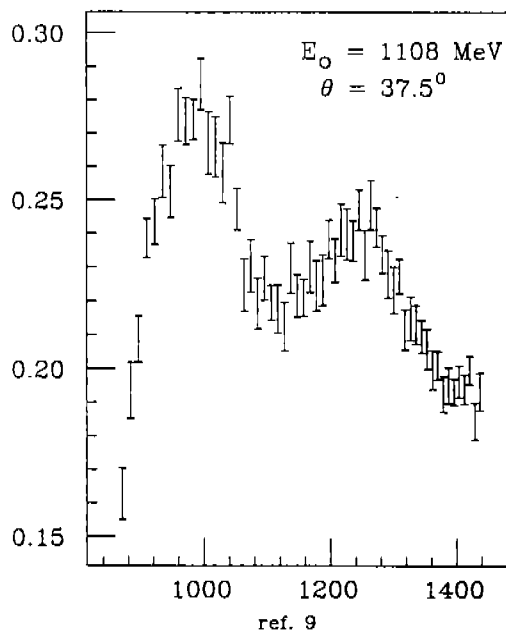
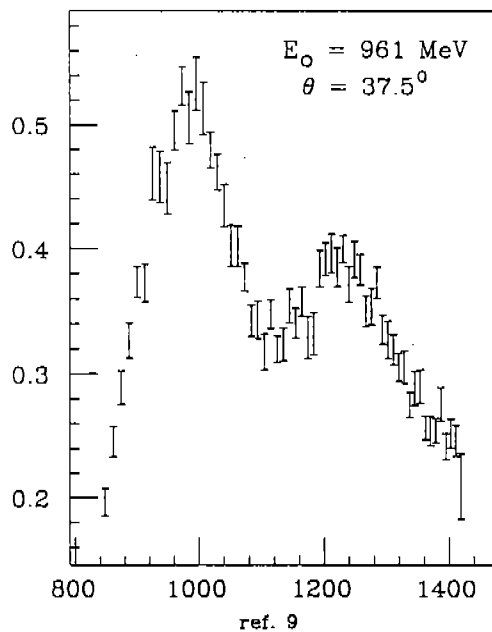
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{56}\text{Fe} (e, e')$

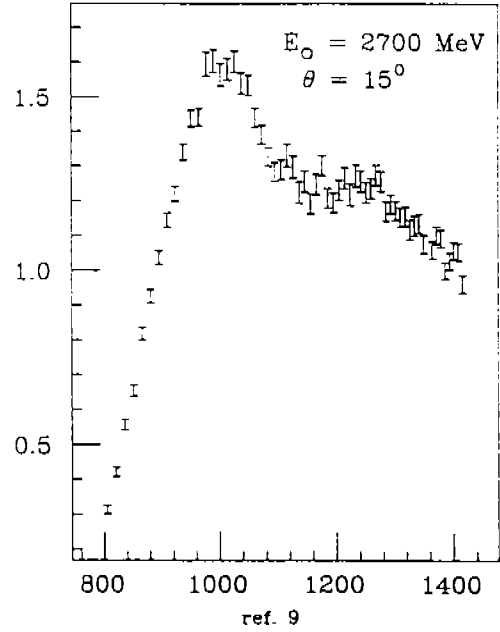
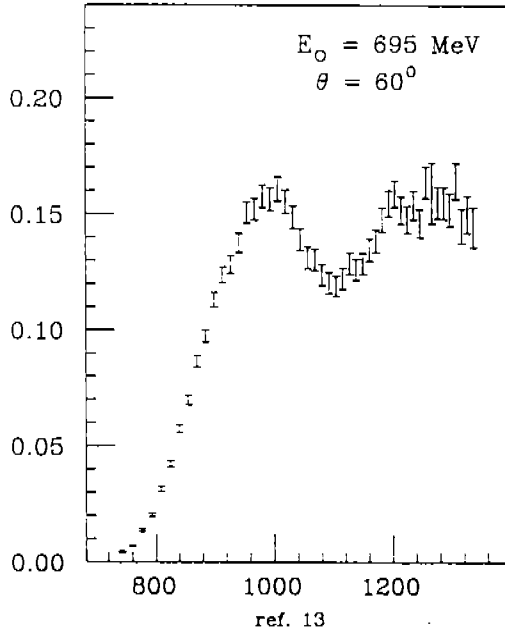
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

$^{56}\text{Fe} (e, e')$

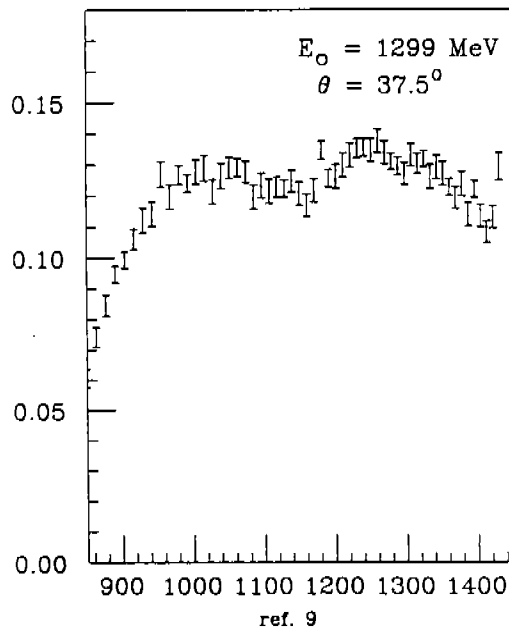
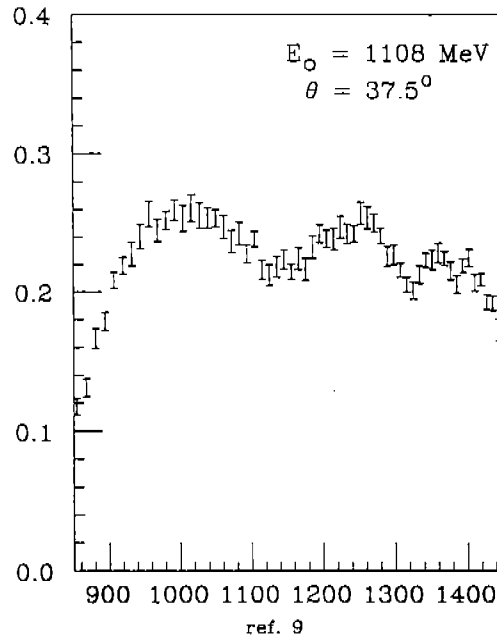
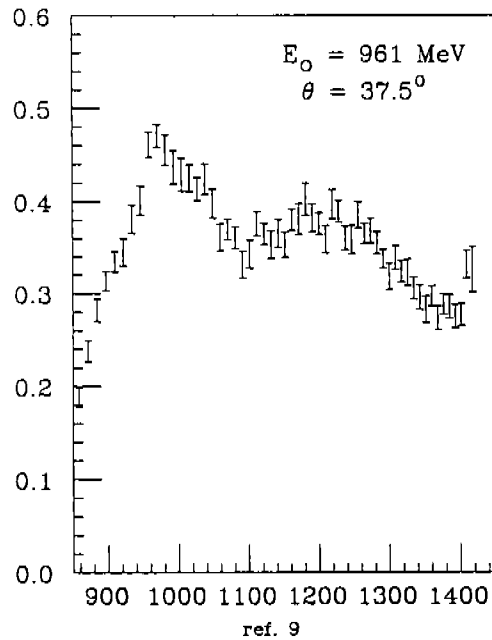
Cross Section Per Nucleon (nb/MeV-sr-A)



Invariant Mass (MeV)

Cross Section Per Nucleon (nb/MeV-sr-A)

$^{184}\text{W} (e, e')$



Invariant Mass (MeV)