Dear Doug,

Table 1 contains the analyzed data only for the Tantalum target. The third column of this table contains the **nominal** central momenta to which the spectrometer was set at the given run according the the HALOG. Of course this doesn't mean that the **true** central momentum of the spectrometer corresponds to this value. In my analysis I haven't assumed that. I have used these values only to group runs with the same central momentum together, i.e.: For the kinematics 1 and 2 the spectrometer was, according to the Hall probe data, set to the same central momentum. Although we don't know yet its correct value, that doesn't bother us, because for now we are only interested in comparing the relative momenta – delta, which are independent of the absolute value of the central momentum as long as the central momentum of the spectrometer is the same in all of the runs.

Table 1:

Run #	Kinematics	Set momentum	delta
3064	Kin 1	356	0.0171305
3102	Kin 2	356	0.0178165
3320	Kin 2	356	0.0173817
Mean value of delta = 1.7443E-2 \pm 2.834E-4			

If we now neglect the recoil of the tantalum nuclei, the relative momenta-delta of Tantalum runs in kinematics 1 and 2 should be the same. (Kin 1 and 2 have different angles so, the recoil correction, while small anyway, is slightly different in these two kinematics.) Under this assumption I computed the mean value of delta.
Then I made the same thing for the Kin 11 runs where the nominal value of the central momentum of the spectrometer was 353.8MeV and got results shown in table 2.

Table 2:

Run #	Kinematics	Set momentum	delta
3112	Kin 11	353.8	0.024006
3422	Kin 11	353.8	0.023404
Mean value of delta = 2.3705E-2 \pm 3.01E-4			

In the case of Kin 3, where nominal central momentum of the spectrometer was 351.4 MeV, I had only one measured point. I simply used the measured value of delta in the following analysis.

I have determined the true values of the central momenta of the spectrometer for different kinematics by using the ratios:

$$\frac{E_c^{Kin11}}{E_c^{Kin2}}=\frac{(1+\delta^{Kin2})}{(1+\delta^{Kin11})} \qquad \frac{E_c^{Kin3}}{E_c^{Kin2}}=\frac{(1+\delta^{Kin2})}{(1+\delta^{Kin3})}$$

These formulas (relatively) determine all central momenta except one. The remaining (unknown) central momentum, which also determines the absolute scale, was obtained by the minimization of the chi^2 function, when fitting my data.

To fit my data I have used the following formula:

$$\delta+1+\Delta\delta=\frac{E_{beam}/E_c}{1+\frac{E_{beam}}{M}(1-\cos\theta)} \quad ,$$

where $\Delta\delta$ represent the electron energy losses which were estimated using Mceep. I have used this formula because I was able to directly fit my data without any prior changes to the energy scale. I have fitted the data for each kinematic setting separately. This means six different fits for HRSL and four different fits for HRSR. In each fit I have considered H, D, C and Ta data. I have excluded Al runs from this analysis because of the angle issues with that target. However, I will consider these data when I will fit the data for each target separately (the „transverse fit“) .

Best regards,
Miha