DRAGON Meeting Minutes

June 24 2003

1 Attendees and Previous meeting

Those present by order of appearance: ML(recorder), LB, AB, MA, JK, HOM, DH, CG, ZL, SE, CW, AL, AO, DO, AH, and CJ.

The minutes of the previous meeting were accepted without alterations.

2 Hardware

CW: We have brought the chiller down to -16.5° which is equivalent to -10° on the DSSSD. One does not want to reduce the temperature any lower than this.

DH: Switched polarities of sextupoles 3 and 4 both of which had the south pole on the top which is bad. See section entitled “Wobbler Studies” to understand how the need for this change came about.

3 Wobbler Studies

MA: We found that sextupoles 3 and 4 were bad by studying the steering properties of SM0X and SM0Y. This was done using a position measurement of attenuated beam on the DSSSD. Steering in x (positive current) moved the beam spot down (y) off the DSSSD (as well in x) see attachments. MA also showed a plot of steering in the y direction which seems to be better than x, in the sense that there is a larger angular acceptance.

DH: questions the effect of steerers 3 and 4 on the BGO vs. strip correlation. We would like to know if this correlation was the same as before the power supply changes. The question is do we see an alternation between left and right going BGOs?

4 CG: Status of Her Work

CG has been looking for an analytical function which would represent the γs from the ^{12}C(α,γ)^{16}O reaction. She has represented each peak by a gaussian, and compton events by a smoothly varying function (for a single energy γ). See attachments for her figures, the 4+ state at 11.10 MeV was looked at, which has a literature branching ratio of 55% $\pm$ 23% to the 6.13 MeV state and 45% $\pm$ 11% to the 6.92 MeV state. CG uses a method outlined in the attachments to normalize her peaks. Then minimizing her χ^2 fit she gets Branching ratios of 54% and 46% for the 6.13 and the 6.92 branch respectively. There are no error bars yet. A modification on the analysis technique was suggested by AO thus further analysis needs to be done.

5 DRAGON GEANT Simulation Status

AO for CR: CR has now finished putting in the BGO array positions in GEANT. The first thing he looked at was the ^{12}C(α,γ)^{16}O reaction, in which he put in all the energies and branching ratios we are interested in. He then looked at the ground state transition with an angular distribution. The attachments show CR's results, shown are the x and y final strip positions on the DSSSD, the recoil energy the emitted photon polar angle and number of BGOs hit for each reaction.

6 The ^{12}C(α,γ)^{16}O Reaction

LB: DH sent out a report on June 23 entitled “Increasing the Angular Acceptance of DRAGON”. LB used the findings from the wobbler studies to put a rotated elliptical cut on the recoils coming out of the gas target. See the aforementioned paper by DH for a complete description. LB finds that even with this cut the detected recoil energy is still symmetric. DH points out that the ellipse is merly to guide ones eye, the true cut is not likely to be so continious.

7 Report by DH

DH: A few suggestions were made in the recent report sent out by DH on how the DRAGON acceptance could be increased. A need to look at the design and cost necessary for these suggestions has arised. AO plays devils advocate and suggests that perhaps further studies of the acceptance would be sufficient. If we could understand our losses then one could just account for this in our cross section data. DH and LB say that 80% losses are unacceptable for any publication. Serious studies of the ion optics on paper (GIOS) are needed baring any refashioning of DRAGON.

8 ^{21}Na(p,γ)^{22}Mg Reaction Possibilities

DH: There is the possibility of ^{21}Na beam up until next wednesday. This depends on how much time ops. spends with the beam. There are some hardware issues which need some attention such as the gas target, MD1 power supply and the N_2 cooler.

SE: We need 2 full shifts of beam given the $\omega\gamma$ of Barry Davids. If SB cannot organize this beam time than SE will.