

July 8, 2003 DRAGON Minutes

Present: Art Olin(AO), Dave Hutcheon (DAH), John D' Auria (JDA), Mike Lamey (ML), Aaron Bebington (AB), Mike Anderson (MA), Hans-Otto Mayer (HO), Dave Ottewell (DFOT), Uwe Greife (UG), Chris Ruiz (CR), Zhihong Li (ZL), Cassi Galt (CG), Alison Laird (AL), Lothar Buchmann (LB), Anthony Oliveri (ATO), James Kennedy (JK), Dario Gigliotti (DG, recorder)

Corrections to Previous Minutes:

- in the section on 21Na, Wednesday should be capitalized
- same section "than" should be "then"
- same section the "N2 cooler" is the gas target trap

Hardware Tests (DAH)

The following hardware issues were raised.

- further 12C beam time is scheduled to investigate acceptance issues
- commissioning of the solid target driver will proceed soon and the following related issues were raised:
 - which detector will be the end detector
 - this will be the first time to dump beam on ED1
- MCP/DSSSD timing studies will be investigated
 - beam?
- elastic monitor needs to be fixed
- ion chamber-the number of ions/eV seems to be species dependent
- experimental running issues raised (UG)
 - energy measurement of beam with and without gas should be included in our experimental running
 - our data shows that stopping powers are off by as much as 20% from quoted values
 - little data exists on stopping powers of 12C on He
 - a pressure profile of the He target does not currently exist
 - this could be measured using the small aperture technique as for H and/or by using and He beam on an He target
- TUDA has beam from July 28th for two weeks but the schedule is such that beam could be swapped to DRAGON during some of this time

21Na Analysis (DAH for SE)

-DAH presented initial analysis on the recent ^{21}Na run as done by SE
-see attached figures for details

- ^{21}Na resonance at 488keV/u was delivered with 5×10^{23} ions on target
-15-20 coincidence events were observed

-a NOVA plot (Fig 1) of heavy ion energy versus time of flight was presented showing a distinct grouping of events at the correct time of flight. This group is indicated on the graph with a rectangle to guide the eye.

-the second figure (Fig 2) upper left histogram shows the time independent alpha peak and the time dependent recoils and beam. This histogram is projected in the upper left histogram of Fig 3.

-the bottom left histogram of Fig 2 indicates good coincidence events taken for runs 9043-9045 with the time cut of Fig 1 and energy cut requiring events greater than 7350 applied.

-bottom right histogram of Fig 3 shows two groupings. Right group are accidentals and left group are good events

-it was mentioned that an additional RF cut may help in the analysis of this run
-this would make the RF efficiency an important quantity

-two issues were raised for this analysis:

- a) decay modes are unknown so it is not possible to do a gamma efficiency estimation
- b) RF cuts will also have an associated efficiency

-further analysis of this state will be done as we now have enough good data to proceed

DAQ Using ROOT (AO)

-it was brought to the attention of the group that TRIUMF will no longer be supporting the NOVA analysis package

-efforts are being shifted to development and use of the ROOT analysis package from CERN

-ROOT is the next generation of data analysis over its predecessor PAW. The major difference is that the system is object oriented and written in the C++ language

-the group may need to make some decision as to when, if and perhaps how they will change to the new system as it is being encouraged for all TRIUMF experiments

-details about ROOT can be found on the CERN website at <http://root.cern.ch>

Data Backup (JDA)

-the issue of data backup was raised and it was decided that there would be some discussion into the matter between JDA and AB (and possibly others?)

Simulation Calculations (CR)

-CR presented some updates on the full DRAGON GEANT simulation
-see attached figures for details

-details of recent additions to the simulation are described in Fig 4.

-Fig 5 and Fig 6 show the addition of the current geometry BGO array, target, and surrounding material (provided by DG) which was added to the full simulation

-Fig 7 shows the addition of FCM2

-beam particles that change charge state when going through the gas are not currently included

-the history n-tuple addition will allow analysis of a reaction in two ways:

- a) at the reaction point so that all variables at the point of reaction can be observed
- b) or as normal where online data is observed after hits are recorded

-a simulation was run of a 12C, 2+ beam with 1000 events to observe particle losses at various elements in DRAGON

-this simulation took approx. 2-3 hours

-this simulation also looked at the effect of polarity reversals in the sextapoles (SX3, SX4)

-polarity reversal had no observable effect

-a summary of the results is shown in Fig 8

-the term "other" in Fig 8 refers to any recoils that do not make it through to the DSSSD

-as shown in Fig 9 and Fig 10 an asymmetry cannot be created as of yet

-Fig 9 shows the final energy of the recoils events in the DSSSD

-the different colours (if they can be seen) represent different conditions imposed in the simulation

-it was proposed that a list of things to do with the simulation be compiled

-before this is done consideration should be given to a summer student report which described some effects due to misalignment of elements in DRAGON

-there is a possibility of using the WESTGRID system (multiple CPU) for doing simulation and analysis work (AO)

AOB

- ATO has produced a report on HEBT tuning magnet correlations
- MA has a produced a report on wobbler studies
 - see the DRAGON web page
- LB made a presentation on theoretical gamma angular distributions
 - see attachment (set3_.pdf) for details