Minutes

Charissa Group Meeting

Meeting held on: 24 August 1992

Meeting held at: Birmingham

Present:	BRF(Chair),WNC,NMC,RAH,ACM,WDMR,DLW
Apologies:	R.A. Cunningham, J.S. Lilley, V. Pucknell
Distribution:	Those present, plus RAC, JK, JSL, VP, GT and file copies to BRF, WNC.

Minutes

1. **Minutes of Meeting of 11 June 1992:**
Item 7(c): No MQT will be included in modified amplifiers; rather, a unipolar signal will be brought out, and this will be sent to the MQT chip in a modified Lecroy 4300 ADC, and thence to a TDC for tests (WDMR). Else, accepted as a true record, except that PVD was not present.

2. **Matters Arising:**

    - A document server now exists on the Daresbury Sun system, and Charissa documents can be accessed on `/charissa/document` on `nnst`.
    - Rolling Grant information had been collated; the total for equipment is £552K for the next period.
    - The detector card index is now at DL, and has been updated to include cards for the strip detectors.
    - A letter of thanks had been sent to PVD, and was much appreciated.

3. **Update on NSC/SERC matters:**
Daresbury equipment: requests from universities will be vetted by NSC members, starting 25 August.
Vivitron: 25MV must be reached by 15 Sep if tube installation is to proceed. Some at Strasbourg had suggested that the MP could be recommissioned as a stop-gap, or perhaps another large tandem could play the stop-gap role.

Indicators are that beam will not be available until July 1994, which implies that the ANU would achieve heightened importance.
Forward look: The next NSC meetings (22 Sep/ 18 Oct) may consider forward looks, and we should prepare for this, although no formal request has been received as yet. BRF

4. **Summary of Grant Spend:**
The situation with the present grants was reviewd by a representative from each university group. The spend consists of items for the new array and interface, viz. infrastructure for data acquisition, instrumentation for 256 channels, scintillator detectors, gas controls and 18 strip detectors of the current design.

   Birmingham funds are all committed, with a meeting with Q&S within days to finalise details. Oxford have £6.5K remaining to commit before their 30 Sep deadline, and the situation is in hand. Surrey funds are all committed, following recommendations from R. Hunt. York have 2/3 of the funds committed, on electronics (R. Hunt) and silicon detectors (incl. Hamamatsu), and the remainder will be just sufficient for gas handling items, as recommended by R. Cunningham (quotes to be obtained). DLW

   Items under consideration for the next period are: electronics, silicon detectors, mechanical aspects of chamber, extra 256 channels upgrade to 512 channels.

5. **Progress on Scintillator Detectors:**
NMC reported that he had tested a new preamplifier supplied by Paul Shotanus. Present preamps have 5.8 mV/MeV gain (NMC measured); the new one also from eV-products has half this gain. Tests with a three line alpha source with a 0.2mm hole in front of the detector show a peak to valley of 5:3 to 5:2, with no discernable difference between the two preamplifiers.

   An order had been placed for 50 scintillators – enough for 5 modules and spares. Cost was £76K incl. VAT.

6. **Progress on Silicon Detector Tests:**
A request for beam time should be submitted for WNC to conduct detector tests in collaboration with M. Leddy, S. Fox and R.A. Hunt (new amplifiers). York have a mount for the Micron/ NASA detector; mounts are required for Q–par and Hamamatsu detectors. WNC

7. **Progress on Gas Supply:**
WNC summarised the situation on behalf of R. Cunningham. The gas handling layout closely follows existing systems at DL, but the needle valves on the gas inlet side are controlled by voltages set using a potentiometer. All shutoff valves will be pneumatic, and hence controllable. A diagram of the gas handling, prepared by RAC, was shown.

   The minutes of the third MEGHA meeting at DL were presented. BRF explained that this acronym (multi-element gas hybrid array) had been adopted for the working group based at DL and working on design for the new array. The minutes included a diagram of the control for the gas handling. R.A. Hunt observed that the use of a PLC matched his design for an ion source for J. Silver. It was noted that the inlet valves were not controlled using the PLC.

8. **Progress on Chamber and Detector Assemblies:**
   BRF reported that 3 meetings (under the MEGHA banner) had been held at DL to discuss the gas system and detector mounting details for nine-detector subassemblies. A decision had been taken to concentrate on the small portable system. This would comprise five modules (each of nine detectors) arranged in a maltese cross around the beam axis, with a small Faraday cup to intercept the beam.

   NMC and WNC reported on recent discussions with S. Metcalf (DL) and R. Cunningham, which provided an update on the present key issues in the design development. The main concern was with vacuum-feedthrough connectors, and in particular the question of ribbon cable feedthroughs. If at all possible, this appears to be the best choice for coming out through the walls of the gas cells. Hence, the question of availability must be addressed. NMC

   The preamp outputs could be connected to amplifiers either by separate shielded coaxial cables (with a mating pair of push-conhex panels), or using shielded ribbon cable. The availablility of suitable ribbon cable needed to be established. DLW

   The mounting of the preamps in the motherboard needed to be clarified. WDMR

   The MEGHA minutes (now being prepared by Stuart Metcalf) should be incorporated on the document server if possible. WNC

9. **Progress Report on Electronics and Data Acquisition:**
   R.A. Hunt reported that the tests using a Lecroy 4300 were still on course for beam tests. WNC,RAH

   RAH had attended a meeting with Edinburgh representatives concerning the use and movement of the Charissa interface to other locations.

   Packaging of electronics: A general discussion ranged across the packaging of electronics for air freight, the size of such modules, and the location of them during an experiment (target or counting area). There was general agreement that crate-sized modules appeared to be the most appropriate, and that these could be constructed so as to stack into standard-sized aircraft pallets. RAH offered to prepare initial estimates of the volume required for amplifiers and data acquisition. Also to be included are gas handling and the chamber. RAH,JK

   Experimental arrangement: Two arrangements were identified for the purposes of discussion: a zeroth order solution (only the workstation in the counting area, everything alse in the target area, with an ethernet link), and a first order solution (tape drive and workstation on counting area, with FERA link to target area, equivalent to 16 ethernets). In addition, it must be possible to interogate individual signals from the counting room. The possibility of using fibre optics was raised.

10. **Developments on Hybrid Detectors:**
WNC and NMC reported that they had discussed with RAC the modifications that were needed in the prototype design. The rear O-rings were to be improved, and the problem with screws bottoming would be solved. The window grounding was adequate, and would not have problems in the design for the new array due to the use of O-rings in that case. The HT supply would be modified to be supplied through a preamplifier, making use of the inbuilt filter circuit.

    New elbows for the gas connections were needed for the high resolution ^{24}Mg run, and more ribbon-coax distribution boxes were needed. The aim was to be able to use all four modules together in an experiment at once. $\boxed{\text{WNC,NMC}}$

11. **Developments on Event Manager and GEC Emulation:**
BRF reported that V. Pucknell was awaiting software for the CAMAC controller before he could proceed further with the connection to the event manager.

    This topic was taken to be adequately covered under item 9.

12. **Update on Recent Analysis:**
BRF summarised the results from Birmingham. AM has almost completed a preliminary report on ^{24}Mg+ ^{24}Mg, and will be able to place limits on the amount of ^{16}O–^{16}O–^{16}O breakup and also the amount of ^{12}C+ ^{12}C from projectile breakup on the ^{24}Mg target. These results will be useful for planning ^{28}Si+^{28}Si and further ^{24}Mg+^{24}Mg runs. Finally, the ^{20}Ne–^{16}O–^{12}C channel has been looked for in this data set.

    The analysis by JP of the ^{16}O–^{8}Be breakup of ^{24}Mg, from the ^{24}Mg and ^{20}Ne beam experiments at DL and LBL, has reached the stage of extracting E_{tot} spectra. The emphasis at the moment is on the DL data.

    The high-excitation ^{24}Mg data being analysed by ML extends high enough to overlap with JTM data from the ^{20}Ne experiment. It is now hoped to get spin assignments for these states.

    WDMR summarised the chain state analysis. The spectra in the recent proposal have now been improved. Breakup to ^{8}Be–^{8}Be is definitely seen. Higher energy data was effected by preamp failure; it is hoped that new data will be definitive. In the data analysis, it had been possible to deduce a small fine-tuning of the strip detector vertical alignment, owing to the good (< 400 keV) resolution for alphas.

    DLW and WNC reported regarding the implementation of playback facilities using exabytes at York and Surrey. Some problems are being experienced at

York with exabytes. At Surrey, Sunsort is still to be implemented when GJG commences.

13. **Discussion of Future Plans:**

    (a) LBL: an application to the PAC may be appropriate for an experiment that would run in May or June 1993.

    (b) ANU: tentatively planning a run towards the end of 1993. This raised several subsidary questions, such as the installation of the Charissa data acquisition system in Canberra, and led into the next item.

    (c) ANU manning: this was discussed in some detail, at a preliminary level. The planning of the actual running time could be to concentrate it into about one month (which would be easier to man), or to spread it over several months to allow for mishaps and teething troubles (which would require a reduced presence, for longer, held together by students staying throughout). Some experience could be gained by planning an initial visit to set up data acquisition. This could be tied in with detector commissioning, to help the manning.

14. **Date for Physics Meeting:**
    This was set for Wednesday 4 November, 11am, at Daresbury.
    A general format was agreed, and a programme would be circulated by BRF.

15. **Any Other Business:**
    BRF reported that a document had been received from the MULTICS collaboration (Italy) reagarding a joint European initiative on heavy ion reaction mechanisms. This was noted by all collaboration members (copies had been circulated). Representation was planned, at the meeting being organised for 16–18 Dec, in Legnaro.
    Orsay experiment: the chateau de cristal will be set up by January 1993, which would be the earliest possible running time if the proposal being prepared in September is approved in October. (Collaboration with Strasbourg group).

16. **Date of Next Meeting:** 11.00 am, *Wednesday* 7 October 1992 in Guildford. Maps to be provided. $\boxed{\text{WNC}}$

W.N. Catford, Secretary.
September 7, 1992
(released September 21, 1992)