CH/Meet/98/01

Minutes

Charissa Group Meeting

Meeting held on: 4 June 1998

Meeting held at: Birmingham

Present:	BRF(Chair), SPGC, NMC, RLC, NC, NJD, MF, SSJ, GRK, RCL, JSL, JTM, VP, WDMR, SMS, RPW, DLW
Distribution:	Those above plus WNC,RAC,RAH,JK,NAO all by e-mail/file-server

Minutes

1. **Apologies:**

   Apologies WNC (at GANIL), NAO and RAC (at Legnaro)

2. **ANU April 1998 running period**

   Two new achievements on this run – the first running of the hybrids through the new electronics and DA and the first running in the mixed hybrid – strip arrangement. The main problem encountered was the degradation of the sheet detectors with radiation exposure (principly the centre module). Nevertheless, four experiments were completed and the data analysis so far indicates the data is good. Thanks to all those who were involved – hard work, but adds more good data to that taken with the strip detector setup in February. Thanks also to Kate for producing a users guide to the new DA system and to Vic for updating the MIDAS user guide (copies on server).

3. **Plans for remaining work on ANU system**

   (a) *DA system (updates and replacements)*

   The list of jobs identified duing the running period was discussed. Already, considerable progress has been made on this

   i: Get all documentation up to date: complete this after work on new PCB versions of modules is complete. RAH ii: Get all modules up to same mod. state: Will happen naturally when PCB versions are completed.

iii: Missing two words on Data Stacks: Fixed in new PCB version of FIACRE

iv: DA hangup problem: Fixed in new FIACRE PCB version – timeout installed

v: Ripple (modulus 4 or 8) on some of TAILs: RH has installed simple trimmer in new TAIL to correct this

vi: Problem of long pulses: TAIL PCB version has user-selected MP (2,4,6 and 8μs), Gate (4,8,12 and 16μs) and Rundown (4 or 8μs)

vii: Repair failed amps: working on this $\boxed{\text{SSJ}}$

viii: Repair fan out modules: working on this $\boxed{\text{SSJ}}$

ix: Install good earthing between all racks and crates to reduce noise: explore getting ANU to do this $\boxed{\text{BRF}}$

x: MIXER in crate number 3 has inputs 1 and 4 u/s: will go back to Oxford to be looked at $\boxed{\text{RAH}}$

xi: Explore DC offsets between MALU crates and correct procedure for setting discriminator level (does loading if look on scope cause a problem?): to go on "longer term" list of work to be done out at ANU next trip

xii: Consider whether discriminator circuit on amps could be improved (e.g. depends on gain setting and susceptable to noise and effectively have two discs): start looking into this $\boxed{\text{SSJ}}$

xiii: Reliability of CAMAC crates (and need spares): get quotes $\boxed{\text{VP,SSJ}}$

xiv: Need a spare serial crate controller: get a quote $\boxed{\text{VP}}$

(b) *The MEGHA array*

i: Pickup between gas and CsI: explore in tests - perhaps Strasbourg. $\boxed{\text{DLW,RLC}}$

ii: Re-angle the outer modules to look at the 280mm target position: put on long term list

iii: Replace preamps on DOWN module

iv: Install CsI on all modules

v: Correct the problem on target vacuum changing system

vi: Replace faulty valve on gas system

vii: Install target drive controller

(c) *Detectors (see RLC document on server)*

The last runs have shown that we have a problem with the lifetime of the sheet resistance detectors under beam exposure. After a few days running the detectors on the central module had experienced very severe effects. The main effect seemed to be that the charge collection times were lengthening enormously so that the energy signal suffered serious pulse height deficit (despite the maximum available shaping time of about 8 μs) and similarly the position signals were also lengthened tremendously (beyond 8 μs).

One approach is to lengthen the amplifier shaping time. This will be possible since the PCB version of the TAIL will allow up to 24 μs rundown time. SSJ will undertaks some checks of the performance of the David Smith peak detect circuit with long signals and see what can be acheived in the amplifiers. He will also get quotes for replacing the Silena circuits with these, so that if we decide to go this way we can. $\boxed{\text{SSJ}}$

However, this is not really an ideal solution. Long term, we have to get away from this problem. A few immediate actions were agreed:

RC/DLW would explore options for beam irradiations to test how the other sample detectors we have stand up to damage (detectors from Eurysis and other prototypes). This would also explore the Hamamatsu detectors with and without the edge strips shielded. It is felt worth the cost of deliberately damaging detectors to gain some insight. During the tests the detector performance would be continuously monitored. Possible locations for the tests are Surrey, York and Strasbourg (where time for detector tests is approved). $\boxed{\text{RLC,DLW}}$

MF would continue tests with resistor chain readout on strip detectors to see what resolution can be achieved and continue discussions with Hammamatsu and Eurysis on what might be possible. $\boxed{\text{MF}}$

SPGC will explore possibilities for multiplexing if we move to DSSDs. $\boxed{\text{SPGC}}$

It is hoped we can discuss the outcome of these trials at our next meeting.

(d) *Neutron detectors (see various emails from NMC)*

Seems like there is a possible interest in getting some neutron detectors in the system at ANU. Possibilities include borrowing from David Hinde, borrowing from NAO (LPC has access to a few), or NMC's plans for "MEGHA module" style detectors.

Over the next couple of months NMC will work up the design of the latter. MF will put together a short physics case outlining the types of experiments which this would allow. Anyone with an interest in these ideas should contact NMC or MF. We should be in a position to make a decision in the Autumn if we plan to proceed. $\boxed{\text{NMC,MF}}$

4. Experiments at MSU

(a) *Report on last run*

RCL gave a report on the last run looking at the single proton halo candidate ^{28}P. Although only two days had been awarded to test the possibility of using the S800 to measure (d,^{3}He) transfers, the setup had worked very well and a real measurement made. Analysis is still in progress, but it is hoped there will be a physics result.

(b) *Update on two new proposals*

Two new proposals have been submitted. RCL has an extension of the above experiment to study ^{27}P, and WNC/JSW a proposal to investigate intruder $2s_{1/2}$ mixing in ^{12}Be and other N=8 nuclei. The setups would be similar so would benefit from running together. However the PAC appeared to be very heavily oversubscribed. PAC meets 30 June. The RCL proposal needs 24 detectors, the WNC/JSW one 16. This would be the 10 thicker Eurysis bought specifically for the fragmentation work, plus some of the thinner Hamamatsu from the MEGHA pool.

5. Experiments at ANL

JTM reported on the run earlier in the year. After a difficult startup, a lot of good data had been recorded. The prime aim is to get spin assignments for $^{12}C(^{20}Ne,^{12}C^{12}C)$, but some other interesting channels may also be there. Data analysis awaits completion by JTM of his ANU data, but should start in a month or so. The hybrids are in a sorry state. NMC offered to work on refurbishing these and organising spare grids and windows. NMC

6. Experiments at GANIL

(a) *Progress on array and DA*

There was some discussion on the drawings sent over by WNC, and everyone was urged to send detailed comments back to him. The overall feeling of the meeting was that it would be best to try and go for a system whereby separate detector telescopes existed which could be placed in arbitary locations. It was felt that experience showed programmes always developed in ways which required new detectors and new geometries.

There is a need to try and further refine our thinking in this area. MF agreed to arrange for a few people to go over to GANIL over the summer to work on this for a few days with WNC and NAO. Anyone interested to contact MF. MF

(b) *New proposals*

The next PAC meetings for GANIL and for SPIRAL would probably be held at the end of the year at the earliest.

7. Plans for running in the next 12 months

(a) *ANU*

Plenty of data "in the bag" (6 experiemnts from earlier in the year) means there is no pressure for running in the near future. There is also the problem of detector lifetime to be addressed (see above). It was agreed that it was unlikely there would be a need for running before next Easter. So far this year we have used 22 days (from an allocation of zero!). A series of proposals had been submitted to EPSRC early in the year, but the formal PAC process is only now getting underway (call in 30 June).

Before the next running period it would be necessary to get the new PCB versions of DA modules installed and running. RH is presently working hard to get these ready. SSJ offered to help if there is anything he could assist with. RAH,SSJ

The last alpha breakup running had shown that it may be a false economy to try and re-use strip detectors. The data taken with a set of new detectors was vastly superior to the previous set using old detectors. BRF would arrange to send back all the detectors from ANU and to have them tested. He would also get some quotes for new detectors. We should be in a position to decide on an order by October. BRF

(b) *MSU*

Earliest would be October. No major constraints and could fit in with demands for personnel/detectors at other locations. In the absence of any clash would probably aim for Oct/Nov.

(c) *GANIL*

Uncertain when the approved experiment might run. Would probably be next year, in a window of opportunity when DEMON finished at Strasbourg and before it returns to Belgium. Some possibility it might be later this year if major changes to the schedule are required if SISSI is not available to provide beams for certain approved experiments. Possible clash in personnel and detectors with MSU run which needs to be watched. RCL,WNC

(d) *Strasbourg*

DLW and RAC will go over soon to install the chamber cables brought from ANU. DLW also agreed to take on responsibility for the list of other outstanding jobs. DLW is considering a run around September and it may be appropriate to do the detector tests (see above) at the same time. DLW,RAC

The Li fusion measurement has been postponed a number of times and now falls outside the timescale when GRK can carry it through. Everything is ready. BRF will investigate who could take this over. If possible, it would make sense to do this at the same time as the above. BRF

8. Discussion on next grant submission

(a) *Timing of submission*

So far Lucy Brady had given no indication of any constraints on submission, but it was known the gamma community bid for EXOGAM would go in October, so it may be we would be asked if we could go for December, although March would probably be preferable for us. BRF will follow this up. BRF

In preparation it was agreed there would be a two-day meeting 10–11 September at Staffordshire. The first would be a report on on-going work (like our normal "physics meetings" at which everyone involved in analysing data would speak (probably all students and RAs). The second day would be a series of talks on plans for the grant bid (both physics cases and equipment bids). BRF would arrange a programme and approach (strong-arm?) speakers. RPW would arrange rooms and accommodation. BRF,RPW

Please put these dates in your diary now. ALL

(b) *Scheme for producing grant documents*

Basically covered by the above.

(c) *Computing issues related to grant request*

VP gave an update on recent developments and in particular the opportunities for using PC hardware in future. This is likely to figure in the next grant application. The gamma community is likely to be bidding at the level of 4k pounds per active researcher.

It is inevitable that we are going to have to upgrade the UNIX machines at ANU. SMS would talk to VP to draw up suggestions. **SMS,VP**

Oxford have already bought a DLT 4000. It was agreed we would not replace any exabytes and would gradually move over to data taking on DLTs as the Exabyte drives died.

VP is going to look into the possibilities for a "suitcase" DA system based on notebook plus VERY small ADC interface. **VP**

9. Papers

With the new grant bid approaching, *GETTING ALL PAST WORK ANALYSED, WRITTEN UP AND SUBMITTED* must be everyone's top priority over the summer months. Present papers in progress are summarised below:

RLC:	MEGHA paper draft circulating, submit by end July; *final comments needed urgently*
JTM:	JP thesis paper submitted last week Analysis of ANU data almost complete - paper over summer
MF:	Working on ^{12}Be paper – out over summer
NC:	Draft of Si reaction paper about to be circulated
NC:	Starting on oxygen target paper - draft out over summer
MS:	Will produce NIMs paper on use of hybrids as part of thesis
GRK:	Li breakup draft out last week
SMS:	Will prepare paper on thesis data over summer
SPGC:	Revised version of ^{12}C+ ^{12}C letter out soon
SPGC:	Follow-up ^{12}C+ ^{12}C paper in preparation
CDJ:	Draft with RLC and BRF; revised draft by end August
SPF:	Final mods going in; submit by end July
PL:	Will be considered with other ^{12}C+ ^{12}C work

Apologies if anything is missed out. Let BRF know. **ALL**

A nice healthy state of affairs. Should make for plenty of good Summer reading.

10. Date of next meeting:

Two day Physics meeting at Staffordshire 10–11 September

Note Added:

`From bw@np.ph.bham.ac.uk Mon Jun 15 12:01:35 1998` (paraphrased, WNC)

Charissa Colleagues

(a) To match with other new grant bids, Lucy Brady suggests a submission in March, for a panel meeting on June. This fits with the time slot we were talking about at the recent collaboration meeting. Unless I have any strong replies to the contrary, I suggest we aim for a submission in March.

(b) *PLEASE GIVE TOP PRIORITY OVER THE SUMMER TO GETTING ALL THE OUTSTANDING PAPERS SUBMITTED SO THEY ARE IN PRINT BY THE TIME THE GRANT GOES IN.*

(c) As many of you know, Bob Chapman and his colleagues at Paisley are interested in the work we have been doing on studies of exotic nuclei using transfer reactions. They would like formally to join in with us for the next grant application. In the meantime, I've suggested to Bob that they would be very welcome to join in on the experiments along this line at ANU and GANIL. Bob hopes to be able to get to the two day meeting in September to catch up on things. In the meantime, please include him on mailings (rc@odin5.paisley.ac.uk).

Brian

B.R. Fulton (edited by W.N. Catford, Secretary).

June 10, 1998 (released June 30, 1998)