Minutes

Charissa Group Meeting

Meeting held on: 27 August 1997

Meeting held at: Birmingham

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

Minutes

1. **Apologies:** received from RAC, RCL, NJD and VP.

   Welcome: Richard Cowin (York) was welcomed to his first meeting.

   Minutes of meeting of 26 February 1997: accepted.

2. **Actions from last Meeting:**

   (a) *Item 7(c):* Draft of the paper on the DA system (RAH,MF) had been delayed due to work on the system itself.

   (b) *Item 7(d):* SMS and MF would discuss $^{16}O + ^{12}C$ further. Drafts by CDJ,SPF,PL had been passed to SPGC who was dealing with them.

3. **EPSRC news:**

   (a) BRF reported a joint EPSRC/industry meeting held in Birmingham, 9 May.

   (b) The request via EPSRC from the EPSRC-Strasbourg Joint Management Committee for reactivation of the group to oversee the Charissa beamline at Strasbourg was discussed. No clear tasks could be established for this group, and it was decided to ask Lucy Brady to check back with the JMC regarding the need for such a group.

(c) BRF reported that the EPSRC business plan was being finalised, and that the IOP had been approached for comment.

(d) The ANU review: no official news yet on renewal, but the meetings seemed to go well. Support was shown at the review, for the idea of providing technical manpower at ANU.

4. Strasbourg Experiments:

(a) *Beam test and decay width experiment*

JTM reported that set-up was scheduled for 17–23 Sep prior to two beam periods ending on 12 Oct. Experiment to measure $\Gamma(^{12}C^{12}C)/\Gamma$ following $^{12}C(^{16}O,^{24}Mg)\alpha$. Gas handling and DAQ to be set up. RPW and SMS had already moved equipment from GANIL to Strasbourg and unpacked it into racks. Two CAMAC crates were needed, and the gas system at York. It was noted that there is no facility for off-line analysis.

(b) *Li + Pb fusion run*

GRK reported on the experiment planned to measure $^{6,7}Li$ + $^{207,208}Pb$ fusion using radioactivity measurements of the products (halflives 100ms to hours). Expect beam in November. Detectors are needed to plan the mounts, and assistance is available from the Birmingham workshops. $\boxed{\text{GRK}}$

(c) *Other plans*

DLW outlines two approved proposals: (a) to test MEGHA modules, (b) to measure ^{24}Mg breakup at small angles (requires source development; hope for Nov/Dec running).

(d) *DAQ and electronics remaining at Strasbourg*

The default plan is to bring the system back to GANIL in January 1998 unless there are more experiments approved at the PAC on 12 Sep. BRF reported that ^{9}Be breakup and DEMON experiments were being contemplated for Strasbourg in Sep 98.

5. ANU Experiments:

(a) *Next month's trip*

SMS, PJ, BRF and WDMR were leaving imminently, followed by others according to a schedule distributed earlier by BRF by email to the whole collaboration on 22 May. This schedule was reviewed at the meeting. The aim was to allow hybrid or strip running with the new DAQ, and with a choice of target positions (new target spans 6° to 52°). One week of beam tests was scheduled and SPGC had arranged a standby experiment. A final shipment was due to leave York on 11 Sep.

After this trip, the only remaining tasks are expected to be:

i: new trigger system (see next paragraph)

ii: remove coupling of CsI and gas signals iii: allow vacuum target loading

iv: reorient detectors to second target position

v: redesign preamp motherboard

It was noted that the last two of these could be linked, and that the reorientation may imply a redesign of the back plates of the modules as well as the mounting plate.

(b) *New trigger system and strip detector setup*

MF reported that the trigger components were assembled, and required about 2 months of debugging tests with a PC. It should be ready in Dec 97, for shipping to ANU, but interfacing with the DAQ will need careful checking, including an estimated 2 days of beamtime.

The strip detector setup was mechanically complete and ready for installation in Sep 97.

(c) *Future experiments at ANU*

BRF reminded everyone about the summer school at ANU 12–23 Jan 98, which could conveniently be linked to running time. He also reported that the gas stripper was being installed in the 14UD, and that 3 weeks of linac running were anticipated between 11 Nov 97 and 15 Jan 98. Interest was expressed in January running (SPGC, DLW) and Easter running (MF, CDF, WNC/NC). It seemed feasible to consider strip detector running in January, and SPGC stressed an urgent need for a long run (cf. Item 13).

It was anticipated that requests for Jan–Dec 1998 running would be called for in Sep or Oct 1997. $\boxed{\text{ALL}}$

6. GANIL Experiments:

(a) *Report on recent runs*

Experiments had taken place in May [p(^{11}Be,d)^{10}Be on SPEG, using 10 2D PSD's], July: [p(^{12}Be,^{6}He^{6}He)p on LISE+DEMON] and [C/Ta(^{14}Be,^{12}Be n n)C/Ta on LISE+DEMON].

Lessons had been learnt about the 2D Si detector wiring and the CsI detector nonlinearities. The matching of corner resistors to the sheet resistance, and the dependence of position resolution on the deposited energy were important for the Si detectors. The nonlinearities for high pulse heights in the CsI was found to include an effect due to loading of the preamp supply.

(b) *Discussions with LPC on future array and DA*

Discussions at the beginning of July at LPC Caen had identified areas where urgent planning was required for a new detector array and the provision of amplifiers and electronics. The DAQ from ANU, now very old and hard to keep supplied with spares, could be replaced. A VME-based system was envisaged, that could interface with EXOGAM, DEMON, etc. which operate on VXI. LPC could share costs on developing electronics if it were to be based at GANIL.

It was planned to reconvene before the end of November, to decide on these matters and the spending needs. MF,WNC

(c) *Future experiments at GANIL*

Proposals from WNC and MF were planned, for running with DEMON when it returns to GANIL in spring 1998. The PAC in December will probably not ask for SPIRAL requests.

7. Matching preamp-amp-detector combinations:

The performance of Charissa amplifiers for 2D Si detectors and CsI detectors was discussed. Performance figures were provided by SPGC in the two documents CH/DOC/97/02 and CH/DOC/97/03, which were discussed in detail. An analysis of SPGC's tests by SPGC and WDMR showed that it was not clear whether anything other than capacitive noise was limiting the performance significantly, and the Charissa amplifier performance could be improved if necessary by using more expensive components. The resolution requirements for heavy and light ions could differ, because heavy ion resolution was invariably target limited and the electronics requirements were more relaxed.

However, other experience seemed to show that environmental noise was an important contribution, and that a sophisticated filtering network was advantageous, especially for the 2D detectors.

The recent running at GANIL had identified that unipolar pulses gave better performance for CsI and Si detectors. The shaping times for corner and energy signals for Hamamatsu and Eurisys 2D detectors, and for CsI detectors, were all different, and a selection of at least four shaping times was desirable. The original Charissa amplifiers, modified at GANIL and now at Strasbourg, were starting to show their age and reliability was a concern.

Tests of the CAEN n568 hex-NIM amplifier were required. This offers improved and versatile performance potentially, at a higher initial cost. MF agreed to conduct tests at Birmingham with the Surrey amplifier. MF,WNC

8. Report from Vic Pucknell:

BRF relayed a report emailed by VP (away in USA). The MIDAS system had been implemented under Windows95 and NT. There was a query about what demand existed for DLT data. The combination of a 2000XT drive and Compact Tape 3 was recommended at this stage. SMS reported that he had collected information about DLT choices. It was decided that there was no pressing need to invest in DLT's at the moment.

9. Detector inventory:

The inventory on the web had been begun. All 2D detectors were included except for detector recently used at GANIL (10 Eurisys and 2 Hamamatsu) and one just taken to Surrey (Hamamatsu). York retained sufficient to fill the 2 spare MEGHA modules with Hamamatsu detectors. Strip detectors were not yet on the inventory.

The scheme now allows each group to edit a file on the server,
see http://nnsa.dl.ac.uk/Charissa/documents and select *a-www-index-is-here*.

Detector inventory to be completed at each group. NMC,NC,SPGC,DLW

10. Experiments planned at other facilities:

JTM reported that his Argonne proposal had been approved, and that it was hoped to run in Feb/Mar 1998. The experiment would require essentially the equipment presently at Strasbourg. It would be important to ensure that it was available for the GANIL running anticipated for the spring. JTM

WNC reported that RCL and he were submitting a proposal to the imminent MSU PAC to do $d(^{27}P,^{3}He)^{26}Si$ using the S800 spectrometer, and that the preferred time for the collaborators was also spring 1998. The equipment required was 12 detectors and 60 channels of preamplifiers, although RCL was looking at increasing this by 4 detectors. It may be necessary to purchase more detectors in addition to the ones used recently at GANIL. WNC

11. Grant Spend:

Progress on the grant spend was briefly reviewed.

12. New students:

New students were confirmed as starting with the groups at Oxford (Charles Bremner, ex-Surrey), Surrey (Kate Jones, ex-Surrey) and York (name unavailable). In addition, York would have an M.Sc.-by-research student. Birmingham would have one new student starting in the nuclear physics group.

13. Any other business:

SPGC discussed the implications of the referee's report on the manuscript describing a study of the $E_{cm} = 32$ MeV six-alpha resonance in the $3^-/3^-$ channel. Extra data would be required in order to measure spins, and this was a priority.

A meeting to assess the progress made in the forthcoming ANU trip should be arranged before the end of October. BRF

A meeting to decide on the needs for electronics, data acquisition and array construction for GANIL should be held, including N. Orr (LPC), before the next collaboration meeting at the end of November. MF

A broad-brush summary of the experiments that have been discussed is given in the following table. Timings are fairly notional at this stage, but serve to highlight the operational considerations.

Month	Laboratory	Detectors	Names
Oct 97	Strasbourg	hybrids	JTM
Dec 97	Strasbourg	hybrids	GRK,DLW
Jan 97	ANU	strips in MEGHA	SPGC,DLW
Feb 97	ANL	strips	JTM
Mar 97	MSU	2D Si	RCL,WNC
Apr 97	ANU	strips AND MEGHA	MF,BRF,NC
May 97	GANIL	2D,CsI,DEMON	WNC,MF
Sep 97	Strasbourg	hybrids,DEMON	BRF

14. Date of next meeting:

The next collaboration meeting would be arranged for the end of November.

W.N. Catford, Secretary. September 24, 1997 (released October 14, 1997)