Minutes

Charissa Group Meeting

Meeting held on: 10 May 1995

Meeting held at: York

Present:	BRF(Chair),WNC,NMC,MF,GJG,SJAH,RAH, CDJ,JSL,ACM,VP,WDMR,RPW,DLW
Distribution:	Those above plus RAC,JK,GT,DDW, all by e-mail/file-server

Minutes

1. **Apologies:** RAC, JK, GT sent formal apologies.
2. **Minutes of meeting of 26 September 1994:** accepted
3. **Matters Arising/ Actions:** All covered by agenda.
4. **Update on EPSRC matters:**

   DLW reported on the meeting at the ANU with Neil Williams (EPSRC) and ANU personnel. Written input had been tabled from all UK users who had responded to the EPSRC request. A meeting had been called for 17 May at Daresbury Laboratory, at which the operation and possible extension of the agreement would be discussed. It was noted that the UK community has significant equipment resources both in Australia and the UK, that could be used in negotiations to extend the agreement.

   The EPSRC review under Prof. A. Shotter was briefly discussed. Over the period being considered, it was felt that Charissa would concentrate on expoitation of the new array. Work at GANIL would involve relatively modest investment of equipment, of the type already developed for the new array. Regarding experiments at overseas labs in general, it was noted that bids for the next grant round (early 1996) should be realistically costed to cover all local expenses including incidental equipment.

5. **Progress with MEGHA development:**

   i. *Hardware (detectors, chamber, gas supply):*
   The target chamber was assembled with blanking flanges, and was at roughing pressure when inspected in the mechanical workshop during the meeting. Module components were complete and awaiting assembly. The computer controlled bias supplies were demonstrated. The gas handling rack had been assembled. The target handling system was under construction.

   ii. *Electronics:*
   RAH reported that since the ANU tests described by M. Freer (CH/Tech/94/04, and Ch/Meet/94/05), the packaging of the amplifier and the associated modules had been improved. The updated status is described in CH/Tech/95/01. The energy and time TDCs were presently in separate units for development purposes only. The WAGER (walk generation) and CATER (convert amplitude to time) modules were linked by the TAIL boards to the TDCs in CAMAC. These are all in prototype stage. The FIACRE (CAMAC) module to put TDC data into FERA format is in the design stage. The FETCH and FARMER modules have now been produced in printed circuit versions.
   NMC reported that the threshold discriminator in the new twin amplifier modules was dependent on the course gain setting, and that this was inherent in the design. He suggested, and it was agreed by the meeting, that the modules should have a Lemo output for each channel on the front panel, for the bipolar outputs. $\boxed{\text{NMC,DLW}}$

   iii. *Data acquisition:*
   It was agreed that a 64 channel version of the new data acquisition system should be installed at the ANU by the end of 1995. $\boxed{\text{RAH}}$
   At a later stage, the data format would be changed into 32-bit Eurogam style (16 bit ADC number and 16 bit ADC value) rather than the present format with hit-pattern descriptor words. $\boxed{\text{RAH,VP}}$
   VP reported on a replacement for the *grafterm* software, which would be in place for the next running. New CAMAC control software was demonstrated, with *Windows* interfaces as in Table 1. Documentation for all of these exists.
   In summary, for the next run, we will have *sunsort* with data broadcasting and the new CAMAC control software for setting up the interface. The *GEC emulator* will remain to actually control the interface and the tape writing at a fundamental level.

6. **Installation of MEGHA at the ANU:**

   i. *Problems with beamline shipment:*
   The beamline for the Linac had arrived on April 10 in a corroded state. The DANFYSIK switchgear had survived. ANU took photographs as evidence. D.C. Weisser (ANU) is preparing an estimate

Table 1: CAMAC Control Windows (Item 5 (iii)).

Window Name	Description
CAMAC diagnostics	Replaces DS file – defines all the module position.
Event Control	Status and monitor.
RSM (ECS92A)	Status and monitor.
Silena 4418/V	ADC setup and monitor. Allows all thresholds to be adjusted.
Lecroy 2277	TDC setup and monitor.
Lecroy 2551	Scaler setup and monitor. Allows Scalers to be read at will.
Lecroy 4208	TDC setup and monitor.
System Control	Control data acquisition, charissa interface, broadcast of data and tape.

of repair costs and manpower. They may be in a position to repair at real cost. This will be considered, along with the options of UK manpower and an outside Australian firm. It was agreed to meet this added expense from the grants, so that the timescale of being ready for the Linac start-up was maintained. BRF would consult with collaborators when estimates were better defined. Insurance aspects would be dealt with later.

ii. *Timescale for installation:*
The following goals and order of priorities were identified:
   A. assemble MEGHA in York with full complement of preamps
   B. package and ship MEGHA from York to ANU
   C. existing amplifiers may need adapting using extender boards
   D. install MEGHA in ANU Dec95/Jan96 and also D. Acq. hardware for 64 channels CAMAC + VME using existing data format
   E. install test scale electronics at ANU
   F. next grant applications due around Feb 96
   G. test experiments with 64 channels instrumented Feb 1996
   H. first full-scale experiment with complete electronics

7. **Next ANU running:**

i. *Time:*
Alternatives of July 95 (the original plan) and October 95 were discussed. The final decision would be taken on 17 May at the Daresbury EPSRC meeting. CDJ spoke in favour of the July date. Other relevant dates were reviewed and are shown in Table 2.
Note added: Meeting on 17 May decided on October 1995 option.

Table 2: Dates relevant to experiment planning (Item 7(i)).

1 July	Eight amplifier modules complete
13 – 21 July	ANL experiment
15 – 16 July	GANIL parasitic beam to set up
28 Jul – 3 Aug	GANIL halo experiment
3 – 16 Sep	EPSRC summer school
4 Sep	Surrey semester begins
11 – 12 Sep	GANIL SPIRAL workshop
25 Sep	Birmingham term begins
18 Oct	York term begins
21 – 22 Oct	Study weekend at Cosener's House

ii. *Experiments:*
The $6-\alpha$ experiment had 4 approved days left, the detector tests 2 days (DLW recommended not using these in July). Two further proposals were submitted: ^{32}S ($^{16}O+^{16}O$ spins), ^{24}Mg (seen in $^{16}O+^{12}C$ entrance). At least 3 proposals were in the planning stages and needed to be completed in the next few weeks.

iii. *Changes to hardware, electronics, data acquisition, software:*
After discussions, it was established that the following would be used if running in July:
software: new CAMAC control interface, "upgrade" to Solaris 2.4. **VP**
Updated *fortran* compiler to run on both workstations. **SJAH**
electronics: 8 new amplifiers to run in duplicate mode. **NMC**
hardware: exabytes on charissa1 to have diagnostic tests, and local Canberra service agents sought. **VP**
If the running were in October, a full crate of 32 amplifiers would be ready. It was agreed that the considerations in this subItem were not determining on the run time.

8. **Status of Strasbourg plans:**

RPW reported that the Charissa beamline in Strasbourg was installed and lined up in Dec 1994. It was pumped down and leaks remedied in Feb 1995. It is estimated that 3 days' work remains before beam can be taken; Birmingham can deal with these jobs. Beam has been requested for 3 hours on each of 3 consecutive days, to be taken as soon as possible. Strasbourg advised on 3 May that no estimate was available for when beam would be provided.

The power supplies require cards to be installed. This can be done by a technician from Daresbury who is expert in these supplies.

The electronics and data acquisition system are assembled together in Birmingham and need to be shipped and installed prior to experiments.

9. **Reports of other running (Orsay, GANIL, Argonne):**

   Orsay: CDJ reported that data from Dec 94 were being analysed at Strasbourg.

   GANIL: WNC reported that data from the ^{19}C experiment were being analysed at Caen, and an abstract had been submitted to the Arles conference. An experiment on ^{17}B was scheduled for July (cf. Item 7(i)) and it was planned to submit a proposal for a transfer reaction experiment.

   ANL: MF reported that a ^{20}Ne beam experiment was scheduled for July (cf. Item 7(i)) using a ^{12}C target to study states in ^{32}S. This would form the thesis data for S. Hoad.

   Others: no other runs were being planned.

10. **Publications and Talks:**

    This was not reviewed in detail at the meeting. The publications and analysis list has been updated by BRF and is included as Table 3.

11. **Any Other Business:**

    (a) *Postgraduate Summer School:*
    JSL requested that this be publicised in each department.

12. **Date of Next Meeting:**

    Tuesday, 4 July 1995
    Birmingham

W.N. Catford, Secretary. May 23, 1995 (released June 6, 1995)

Attached: table 3, summary of analysis on Charissa work.

Table 3: Status of analysis on Charissa work

Description	Status
Outstanding from NSF Running	
Spins at low energy (York)	Unknown
Band termination (York)	Unknown
^{24}Mg on ^{12}C ang dist (York)	Recoil ambiguities and poor stats. Status unknown
^{12}C on ^{24}Mg (Surrey)	TDC failure and poor stats. Repeated Jul 94.
^{24}Mg to ^{12}C*+^{12}C (B'ham)	SH analysing. No yield but may be stuff in other channels
^{48}Cr to O+O+O (B'ham)	AM thesis. Draft paper prepared (inc. RLM work below)
ANU (Oct 93)	
^{16}O on ^{40}Ca (Surrey)	SMS analysing. Low statistics. Hopeful on ^{28}Si+^{24}Mg coincidences.
^{28}Si and ^{32}S (B'ham)	NC thesis. Draft of 16O+16O ready. Paper on ^{12}C+^{16}O to come
^{12}C+^{12}C 0_3^+ (York)	SPMC thesis. Paper published
^{12}C+^{16}O ^{16}O chain (B'ham)	MF analysis. Paper published
^{12}C+^{16}O 7–α chain (Oxf)	PS thesis. Paper accepted
Commissioning runs	
ANU (April 94)	
^{12}C+^{12}C ex. fn. (York)	CDJ analysing
^{12}C+^{16}O ex. fn. (York)	SF thesis. Analysis in progress
^{28}Si oblate (Surrey)	GJG analysis complete. Draft paper prepared.
Tests of DA	
Test of Hybrids	
Test on MEGHA	PL mid term (with later runs for possible NIMs?)
ANU (July 94)	
^{16}O+^{16}O for ^{24}Mg states (B'ham)	MF analysis. Paper submitted
^{12}C on ^{24}Mg (Surrey)	SMS analysis complete. Limit on cross section. Outline of short paper in preparation.
^{24}Mg+^{24}Mg gammas (B'ham)	RlM midterm. Draft paper ready
Tests of MEGHA	PL mid term (with later runs for possible NIMs?)
ANU (March 95)	
^{16}O+^{12}C to a+a+Ne (B'ham)	GRK thesis. Analysis in progress
^{12}C+^{12}C 6–α fine struct (B'ham)	RlM thesis. Analysis in progress
^{12}C+^{12}C 6–α O+Be chan (York)	PL thesis. Analysis in progress
MEGHA test + O tgt (York)	CDJ to analyse for 16O target paper