CH/Meet/97/01

Minutes

Charissa Group Meeting

Meeting held on: 26 February 1997

Meeting held at: Birmingham

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

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Minutes

1. **Apologies:** received from JSL and VP.

   Welcome: Nicky Davis (Staffordshire) and Roy Lemmon (Surrey & Daresbury) were welcomed to the collaboration. This was also the first meeting attended by Glenn Kelly (Staffordshire) and Steven Singer (Birmingham).

   Minutes of meeting of 1 May 1996: accepted.

   Matters Arising: all covered by agenda items.

2. **ANU matters:**

   (a) Outstanding work on MEGHA

   MEGHA was now installed and the DA was also installed and commissioned. Thanks to all who contributed.

   The list of "Jobs on MEGHA" circulated by email by BRF before the meeting was discussed – **attachment A** to these minutes. BRF asked if any items were missed off the list. DLW reported that vacuum tests at York will occur for ribbon feedthroughs, and WDMR expressed concern about strip detector preamps and cabling design. It was agreed that mounting the full 10 strip detectors should be classed as a new development project. SPC reported that the software was in some disarray after recent modifications, and should be rationalised.

(b) Mechanism of getting jobs done

The following responsibilities were agreed.

- Hardware:
  Items on list to be dealt with, with one person responsible for coordination, who will report back to the next meeting on progress so far, plus plans and timeline for completing the rest (including time for trip to ANU to complete work). **DLW**
  Assistance in progressing these tasks. **NMC**
- Electronics and Readout:
  RAH reviewed the list. The implications of the "new DL module" replacement for the HSM were not clear. RAH reported that support from ANU would benefit from a proper agreement. Unfortunately, there seemed to be no mechanism to achieve this.
  One person responsible for coordination, who will report back to the next meeting on progress so far, plus plans and timeline for completing the rest. **SMS**
  Assistance in progressing these tasks. **RAH,VP**
  It was agreed to purchase a Kinetics CAMAC Crate controller and two 'special offer' Starbust units. **WDMR,RAH**
- Infrastructure: to be included with Hardware. **DLW**
- Software: discuss and report to next meeting. **SPC,SMS**

(c) Submission to review of EPSRC/ANU agreement

N. Williams had made some progress in defining the procedure and it was anticipated that the review committee would be announced soon. In the first instance, a scientific case for continuing the agreement must be established before the matter will be considered in more detail.

It was expected that submissions would be due in the next few months. Initial information would be assembled for a first draft report on work so far, under the first agreement. **BRF**

Proposals to use MEGHA and the Linac – in the form of Letters of Intent – should be coordinated and prepared. **BRF**

Input related to collaborations on fission studies. **RCL**

Input on GANIL-related experiments. **MF**

... with assistance from **NMC,WNC**

Input related to m-substate studies. **BRF,NJD**

Input related to light ion breakup studies. **GT**

Input related to the cluster programme. **SPC**

3. GANIL matters:

Several meetings had been held during 1996 and minutes had been posted on the file server as Char/GAN/96/*nn*.

(a) Preparations for ^{12}Be and breakup experiments: one run was presently on the schedule for 26 May, and the other was to be requested for October, although there was some pressure from GANIL to run as early as June.

(b) DA requirements: It was desirable to have a DA system based permanently at GANIL with 128 channel capability. It seemed that this could be reconciled with the desire for a 64 channel system at Strasbourg, with approximately £10K of purchases (see below). WNC pointed out that the DA requirements come in three stages: the transfer run, the breakup run later in the year, and the longer term installation of a 256 channel system for SPIRAL as requested in the grant round. The present arrangements covered the first two stages.

(c) British Council grant: funding of £3,000 had been received by MF to cover collaboration travel to GANIL from Birmingham and Surrey. The LPC collaborators had received a reciprocal grant, so more exchanges between France and the UK were anticipated.

(d) SPIRAL letters of intent: MF had submitted a Letter covering charged particle studies, with input from NMC, WNC and collaborators at LPC. Nigel Orr (LPC) had submitted a neutron halo Letter with Birmingham and Surrey as collaborators. A Letter from Strasbourg had included transfer and gamma-ray studies.

(e) EU TMR submission: Surrey and Birmingham were members of a joint European submission involving all key centres studying halo physics. If successful, it would fund travel between institutions plus a 24 month experimental post-doc position at Birmingham (and a theory post-doc position at Surrey).

(f) Exogam ancillary detectors meeting: J. Durell had announced a meeting about Exogam ancillary detectors, in Manchester in the period 1 to 4 April. Representatives from the collaboration should attend. WNC and MF had attended a DA meeting in Daresbury on 7 January and WNC had established that Charissa ADC's could feed into the Exogam system using the FERA readout. A VXI box to accept and merge FERA input was being built at Bordeaux for this purpose. WNC and possibly MF would attend an Exogam DA meeting in GANIL on 6 March. WNC

(g) Future proposals: it was noted that time was at a premium at GANIL, with the construction of SPIRAL impacting. The next PAC was likely to be early in 1998.

As a result, the transfer of some of the work to MSU was being considered. it was noted that the next MSU PAC is in October 1997.

4. Strasbourg matters:

A meeting had been held in Daresbury on 19 February to discuss the outstanding work and coming experiments for Strasbourg, and minutes had been circulated by email by BRF. (**Attachment B** to these minutes.)

There are 5 approved experiments. It was hoped to run some experiments in June and some near the end of the year. Before experiments went ahead, more measurements of beam calibration and energy resolution were needed.

A 64 channel DA system was required. It was agreed that the necessary purchases should be made (approximately £10K) to complete the provision of a third system. BRF

Details of actions in **Attachment B**. BRF,JTM,DLW,JSL,VP,RAC

5. Plans for next 12 months:

Submissions prior to the meeting had been received from all groups except York, and these had been circulated with the agenda, by email.

The Birmingham, Oxford, Surrey and Staffordshire submissions were largely compatible. Running at ANU was requested for the end of the year, running at Strasbourg in June, and at GANIL in May and July or October. Staffordshire required running in ANU at an earlier time. Birmingham and Oxford were considering ANL or LBL running towards the end of the year, and Surrey was considering MSU running. The runs at LBL, but not at MSU, may require DA capability.

DLW summarised the York position, citing a final year student and the new post-doc position due to be filled on 1 July. He had investigated the possibilities of running at LBL after GAMMASPHERE leaves in September 97, and planned to send a Letter of Intent to the June 97 PAC.

There was discussion of the relative merits of Argonne and LBL for pursuing neon and argon experiments. The Argonne PAC is in May 1997. These considerations should be progressed. JTM,SPC,DLW

RPW summarised the Staffordshire need for ANU data before 29 September. It was noted that the EPSRC Summer School 1–13 September clashed with some possible run times. Also, a prior trip is required to complete MEGHA work.

The timing of the next ANU running remains to be resolved. Possibly, Surrey and York running could be brought forward. BRF

6. Grant spend:

It was noted that the equipment and running costs requested in the grant had been lumped together and reduced by $\sim 33\%$ in the awards.

Detailed consideration of the implications was deferred to the next meeting. Updates on the grant award and grant spend to date should be forwarded to BRF by 7 May. BRF,WDMR,DLW,WNC,RPW

Revised costings for the spend should be sent to BRF before 7 May in the following areas:

GANIL detectors, electronics and DA WNC

MEGHA electronics and readout WDMR

Detectors for MEGHA and other non-GANIL running DLW

In addition, the cost implications of switching from Exabyte to DLT should be assessed, and FDDI costed, for the same deadline. SMS

7. Progress on papers:

(a) *Internal circulation of preprints:* it was agreed that first drafts of papers should be circulated throughout the collaboration as a matter of course, using email and posting a copy on the restricted Web site. ALL

It was also agreed that the results of analysis in progress should be circulated and posted on the Web at an early stage; in particular, spectra and plots were valuable. ALL

(b) *Author policy:* the summary of present policy was circulated by BRF by email before the meeting and the following was accepted and confirmed:

> Present practice is for the authorship on papers to reflect those who were present at the time of the experiment, plus anyone who made a significant contribution later in the analysis stage. On particular occasions we have widened this to reflect periods when work by others is essential for the success of the programme (two examples being the first period at ANU to acknowledge the work by those on the installation and commissioning teams, and the recent period at ANU when many people have contributed to get MEGHA going.

After discussion, it was agreed that adding "the Charissa collaboration" on the author list would be appropriate for many instrumental papers, such as the MEGHA papers, but seldom if ever for physics papers.

(c) *MEGHA papers:* it was agreed that NIM papers describing MEGHA were an urgent priority, and the following division of responsibilities was decided:

First draft of MEGHA paper (hybrid and strip configurations) to be circulated **by 1 May 1997** at latest. DLW

Paper on DA system to be circulated in draft by 1 July 1997. RAH,MF

Paper on sheet resistance detectors to be progressed. RC,DLW

(d) *Status of other papers:* the list from the previous meeting's minutes was reviewed and updated. This is **Attachment C**.

Need to look at band termination data and report back if anything worthwhile. SPF,DLW

Discussions needed on extra July 94 data on $^{12}C(^{16}O,^{12}C^{12}C)\alpha$. SMS,MF

Copies of April 94 and March 95 York papers (CDJ, SPF and PL) to be passed to SPC to assist response to SPC's referee's comments. DLW

8. Any Other Business:

(a) *Email addresses:* update lists at Daresbury (contact VP) $\boxed{\text{BRF}}$

(b) *Insurance claim:* contact Swindon regarding claim for first shipment to ANU. $\boxed{\text{BRF,RAC}}$

(c) *ANU technical support:* it was noted that electronics posts at the ANU were under threat, and that whilst this was regretted there did not appear to be any mechanism of helping ANU from Charissa resources.

(d) *Detector stocks:* there was a call for a list to be kept on the Web. RPW reported that he had written a programme to generate the web page from data that needed to be typed in by someone.

(e) *EPSRC Evaluation Exercise 1997:* returns had been due from each group, as input to this exercise. These had either been submitted or were in hand, and included data on Charissa results since 1992.

(f) *Physics meeting for 21 March:* a programme for this meeting at Daresbury to be distributed. $\boxed{\text{BRF}}$

All attendees to inform RAC, for admission to site. $\boxed{\text{ALL}}$

9. Date of Next Meeting:

Wednesday, 14 May 1996
Stoke-on-Trent

CHARISSA Physics Meeting:

Friday, 21 March 1997
Daresbury

Attachments:

A : Jobs on MEGHA as circulated before the meeting

B : Meeting at Daresbury Laboratory 19.2.97

C : Status of analysis on Charissa work, 26 February 1997.

W.N. Catford, Secretary. March 5, 1997 (released March 5, 1997)

Attachment A: Jobs on MEGHA as circulated before the meeting

These are listed under three sub-headings: (1) hardware (2) electronics and readout and (3) infrastructure:

(a) Hardware

- Cables need sorting out so they can be used for hybrids and strip detectors
- Vacuum control system needs to be made fully operational
- Taps on each module gas supply lines so they can be isolated
- Bottom module to be installed
- Noise problem needs to be resolved (major check on earthing arrangements)
- Ensure chamber can be spilt for intrenal access
- Insulating vacuum connections
- Target ladder drive and calibration required - mechanism may need some work)
- Target exchange chamber needs some mod
- Noise on preamp cans (filters and decoupling circuits on PCB?)
- Cross talk between signals in modules

(b) Electronics and readout

- Channel failures in CATs and WAGs
- Need to sort out why noise on some CAT channels
- Do we continue with Starburst or use FACET - if former then need some spares
- Trigger needs to be finished and incorporated into system
- Need to decide if need another rack
- More memory for Charissa1 and Charissa2 and X terminals
- Improvements to amp control programme on Sun
- Need to thinks about DA rates to tape
- Future of GEC and data flow
- Fix broken CAMAC power supplies
- Need test mode in amp control program to test individual amp slots
- Bias supplies to remain on PC?
- New pulsers
- Nim to ECL converters

- A way of getting the STROBE-in/STROBE-out as with EC
- Scalers - not working at present
- Simple trigger system
- New Oscilliscope
- Multi channel digital scope for looking at ribbon cables
- Preamps for strip detectors and spare preamps
- Some sort of LED indicators on amplifiers for disc and s/hold
- Rate meters
- Unit to patch monitor signals from all amp crates depending on which selected
- Serial cables need their connectors covering (one wire needs resoldering)
- Bias supply program on PC needs mod to damp leakage feedback response
- Amp programme needs mod to allow settings to be saved and restored
- Need a way of monitoring deadtime of the system
- Occasional corruption of data from amps to control problem
- Minor problems with response from CAMAC crate controllers
- Need a couple of spare CAMAC controllers
- Sync problem with HSM (and no software reset). New DL module would cure
- No buffering now RSM gone. Again, new DL module would cure
- All exabyte drives at ANU appear to need attention
- VME SCSI interface needs repair
- Broadcast of data goes quickly from 100% to 0% as rate increases (need to reserve some buffers just for broadcast)

(c) Infrastructure

- Metric allen keys and a set of spanners needed

(d) General

- Need urgent analysis of recent data to ensure no "funnies"

Attachment B: Meeting at Daresbury Laboratory 19.2.97

Charissa at Strasbourg

BRF, JTM, DLW, JSL, VP, RAC

1. Outstanding work at Stasbourg

The report produced by Bob Cunningham after the October 1996 run summarises the outstanding work required. Following a dicussion of these items, only the broken arm control would prevent running. BRF would discuss with SJAH what is needed in this area and see when this might be repaired. In regard to the control system, VP noted that the VME processor is rather dated and its memory is full. The view is that, providing no additional functions are required on the system, it can continue to serve unless it becomes unreliable due to old age (disc drives etc.). At that point an upgrade to more modern equipment will be essential.

Steve Chappell had produced a report on the Commissioning runs in October which contains useful information on the beam performance. John Lilley has also produced some notes on the beam transport and the proceedure for steering beam down the line. Based on the experience of the commissioning runs, John Lilley had prepared and sumbitted a "wish list"to Strasbourg. Strasbourg had indicated their willingness to act on these. They have already made a mod to the stabalisation slits which is giving good intensity stability (10%) and also ordered a new ion source, which should solve a number of beam related issues. With regard to beam stability, reproducibility and absolute energy calibration, we would benefit from some measurements. It might be sensible to plan for these before any serious running, perhaps at the time the final work on the beamline is carried out.

2. Plans for running

There are 5 approved proposals:

MF Measurement of 12C+12C partial decay widths
JSL Effect of breakup on 6,7Li fusion
BR 9Be+208Pb
RC Low excitation region 24Mg>12C+12C
DLW Detector testing

Of these the 9Be was a letter of intent, and there are no plans to start this programme until later in the year. The 24Mg experiment cannot run until the new source is operation, which puts it later in the year. The partial decay width and Li fusion measurements are ready to go and the hope is that they could be run sometime around June. However, it would be unwise to request a shedule slot until we are sure that the arm drive works OK. JSL may have funding for a period at Strasbourg and he will see whether this could fit around a June run. DLW also has support for a period at Strasbourg. The time of this isn't fixed yet, but may be delayed to coincide with availablitiy of new source for 24Mg experiment.

We need to explore with Strasbourg whether the above plans would fit with their intentions for scheduling the machine during the first half of the year.

ACTIONS:

BRF Discuss chamber control with SJAH and develop plans for repair.

RAC Explore suitable time for trip to Strasbourg within next few months to carry out as much of the other work as possible - trip about one week length. The arm control work would be carried out in this same period.

ALL Be prepared for a trip out to Strasbourg at the same time to make some measurements on beam calibration/resolution

JSL To get together full set of documentation on beamline and chamber operation to be left at Strasbourg

BRF Write to Neil Rowley (cc Florent Haas) with details of plans including period in April/May with access and runs in June.

BRF Write to Dave Warner to request support from RAC for trip to Strasbourg.

NMC Explore provision of hand controler for chamber arm drive with easy connection - any possibility of backup readout of arm angles?

BRF to ensure have DA system available for running periods (has to match with requirements for GANIL).

DLW to ensure gas system is available for use.

Attachment C: Status of analysis on Charissa work, 26 February 1997.

Description	Status
Outstanding from NSF Running	
^{24}Mg to ^{12}C*+^{12}C (B'ham)	Analysis complete. Draft circulated by SH
ANU (Oct 93)	
^{16}O on ^{40}Ca (Surrey)	Completed for SMS thesis
^{28}Si and ^{32}S (B'ham)	PR C53(1996)1804
^{12}C+^{12}C 0_3^+ (York)	PR C51(1995)695 and PR C53(1996)2879
^{16}O+^{12}C (4α chain) (B'ham)	PR C51(1995)1682
^{16}O+^{12}C (7α chain) (Oxford)	PR C51(1995)3500
ANU (April 94)	
^{12}C+^{12}C ex. fn. (York)	Draft with DLW
^{12}C+^{16}O ex. fn. (York)	Draft with DLW
^{28}Si oblate (Surrey)	Submitted to NPA
ANU (July 94)	
^{12}C on ^{24}Mg (Surrey)	SMS short paper in preparation
^{12}C(^{16}O,^{12}C^{12}C) (Surrey)	SMS short paper to prepare
^{24}Mg+^{24}Mg gammas (B'ham)	PR C53(1996)1963
^{12}C(^{16}O,^{12}C^{12}C) (B'ham)	PR C51(1995)3174
ANU (March 95)	
^{16}O+^{12}C to α+α+Ne (B'ham)	Submitted to PRC
^{12}C+^{12}C 6–α fine struct (B'ham)	Accepted PRC
^{12}C+^{12}C 6–α O+Be chan (York)	PL Zeroth draft complete
MEGHA test + ^{16}O tgt (York)	RC draft prepared for NIM
Li,C,O(^{16}O,^{12}C*) (B'ham)	JP G22(1996)1053
ANU (February 96)	
6α in 3−/3− (York)	Submitted
^{16}O+ ^{12}C to ^{12}C ^{12}C (B'ham)	MF analysing
^{16}O+ ^{16}O to ^{16}O ^{12}C (B'ham)	JTM analysing
ANU (July 96)	
^{9}Be(^{24}Mg,^{12}C^{12}C) (Surrey)	NC analysing
^{7}Li(^{24}Mg,^{12}C^{12}C) (Surrey)	MS analysing
^{24}Mg low ex. (York)	RC analysing
ANU (December 96)	
^{12}C+^{16}O ang corr (B'ham)	CDF analysing
^{32}S(York)	GD analysing
^{12}C(^{16}O,$\alpha\alpha$) (Staffs)	GRK analysing
ANU (January 97)	
^{10}B + ^{14}N (Oxford)	SPGC analysing