Minutes
Charissa Group Meeting

Meeting held on: 26 September 2000
Meeting held at: Oxford

Present:	MF(Chair), WNC, NMC, BG, RAH, SSJ, RCL, DM, ACM, VP, WDMR, NS, RPW, DLW Claire Harrison, Charles Bremner
Distribution:	Those above plus BRF,NAO all by e-mail/server

Minutes

The meeting was arranged to tie in with the retirement dinner organised to mark the contribution of **Bill Rae** *to the formation and success of the collaboration.*

1. **Minutes of Previous Meeting – 17 June 2000:** approved.
2. **Staffing changes:**

   Oxford: As noted in the previous minutes, Bill Rae has formally retired (effective 1 April 2000) and hence the Oxford group will wind down operations. ACM has accepted a position with a financial software company. Charles Bremner is completing his thesis and will undertake a 4 month PDRA. Ismail Boztosun is presently in a PDRA position in Plymouth.

   Birmingham: It was noted that BRF has accepted a new Chair at York. Neven (known as Soya) Soić has commenced a PDRA position and Neil Curtis will also commence in mid-October. One PDRA place remains to be filled, and applications have closed. Recent departures: Marie-Paule Nicoli and Laurent Donadille. Peter Leask, Nick Ashwood and Richard Wooliscroft continue on Ph.D. and Karl Metalko is starting.

   York: BRF will be away at TRIUMF on sabbatical until December 2000. Barrie Greenhalgh commences as PDRA on 1 October. Claire Harrison will continue on Ph.D. and John Pearson is starting.

Surrey: DM continues in post as the only PDRA doing so. An additional post has been added to the grant, with the intention of funding Alan Merchant. If he is not available, then the situation will require clarification with EPSRC. A PDRA from the Exogam project, Marjorie Belleguic, has commenced and is working on topics of related interest to Charissa (i.e. VAMOS). Kate Jones is completing her Ph.D. thesis and Steve Pain is starting.

Staffordshire: A new PDRA has commenced: Deborah Hallcroft from Liverpool (PJB). Craig Bickerton continues on Ph.D.

3. Grant Matters:

(a) *End of grant reports:*
The end date for all grants except Birmingham is 30 September 2000 (for Birmingham, the end date has been revised to 1 March 2001). The September date implies a deadline of 30 December for receipt of the grant reports at EPSRC, with a missed deadline incurring severe penalties. It was **agreed** that a deadline be set for submission of a joint Charissa report of 1 December. $\boxed{\text{ALL}}$

A draft of a common report should be produced. $\boxed{\text{NMC}}$

An updated joint publication list should be produced. $\boxed{\text{RPW}}$

The Oxford report will formally be submitted by Nick Stone. $\boxed{\text{MF}}$

(b) *Issue of new grants:*
The grants that started this year have been re-announced to take into account the retirement of WDMR, and the transfer of BRF to York. York will receive a new grant in the name of BRF, additional to the recently begun grant in the name of DLW. The Birmingham and Surrey grants are being re-announced with adjustments. The Staffordshire grant is unchanged, but its commencement has been deferred until 1 Nov 2000 for internal reasons.

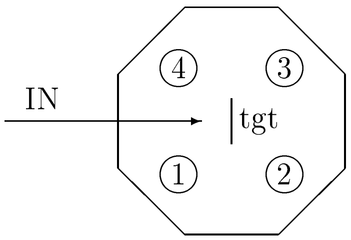
(c) *Spending on Oxford Grant:*
The equipment allocation of $\sim$ £65k on the Oxford grant had been satisfactorily committed in accordance with discussion in the previous meeting, and a list of the purchased items was tabled by MF.

4. Strasbourg running plans:

(a) *Running period in July 2000:*
MF reported that the experiment to study T=2 states in ^{12}C using ^{9}Be+^{9}Be had run successfully. It had taken advantage of the recent refurbishing of the target chamber and the DAQ system. The data were being analysed by N. Ashwood and were very encouraging.

(b) *Re-alignment of beamline:*
NMC reported on the work performed by NMC, DLW, RPW and Ron Marl. A document was tabled, describing the work, and is available on the DL server. Re-alignment had been achieved, but no beam was available for testing. The vacuum in the target chamber was improved to a few times 10^{-6} mbar using both turbopumps.

(c) *Chamber controls:*
VP reported on the control programme for the arms in the Charissa chamber. The VME crate was replaced by a Windows-NT workstation with MIDAS interface, and was much more compact in size. The status of the four arms is: (1) motor drive lacks voltage supply, (2) moves but lacks position information, (3) fully operational, (4) no working motor and drive sawn off. The target height and angle controls are functional except for limit switches. The pulse counting on the height encoder requires further work. Definition of arm numbers:



It was **agreed** to plan a one-week period of work to complete the necessary tasks and to finalise 3 working arms. This could be in late November 2000. Helpers were needed. $\boxed{\text{VP}}$

(d) *Present status of facility:*
DLW reported that there appeared to be severe difficulties is solving transmission problems in the Vivitron. No runs had been scheduled following the cancellation of the summer schedules. The running of EUROBALL experiments was likely to be a priority upon re-start. The stay of EUROBALL had been extended until the end of 2002. Further planning of running times awaited news of beam availability.

(e) *DAQ developments:*
VP reported that a solution to the time stamping of events had been found, which would be implemented for the planned activation experiment.

5. ANU running plans:

(a) *Update on results from September 1999 running:*
The experiments used quadrant-strip-CsI telescopes and strips. All of the data sets show good results. BH reported that he had analysed data from ^{18}O+^{7}Li to search for breakup of ^{16}C. Although none was found, he had identified breakup of ^{18}O* $\rightarrow ^{14}$Cα and ^{18}O* $\rightarrow ^{14}$Cα and analysis was proceeding. DM reported that he was analysing ^{9}Be+^{9}Be to study ^{11}Be* $\rightarrow ^{10}$Ben and was able to extract branching ratios for decay to different bound states in ^{10}Be. Analysis of other reaction channels would follow. MF reported that LD had started on the analysis of the ^{9}Be+^{7}Li reaction, and this was now being completed by NS.

(b) *DAQ update:*
In the September 1999 running, the DAQ had given two main problems: the second stage trigger was not functional, and there was repetition of data words with loss of synchronisation. RAH reported, and tabled a document containing a summary of investigations by RAH and SSJ. The TAIL unit had given an 'echo' problem at 800 ns and this had been fixed. The FEED units led to the system hanging, and a fix had been identified but required extra work. Briefly,

the FEEDs expected 3 FIACRES to give input, but with the second level trigger there were not always 3 inputs produced.

SSJ is building a complete DAQ at Birmingham. Everything should be ready for running in January 2001. SSJ

(c) *November 2000 running:*
DLW reported concerning the experiments, which would include a search for the 10^+ state in ^{16}O believed to be observed in the data of Charles Bremner, plus 4 discretionary days for astrophysics proposals: $^{17}\text{O}+^{12}\text{C}\rightarrow^{19}\text{Ne}\rightarrow^{15}\text{O}\alpha$ and ^{9}Be breakup on ^{12}C. There were a total of 10 days of running planned.

The DAQ work would involve putting in LynxOS processors and a Strasbourg-like system for this run. VP discussed a check-list of parts required, and would liaise with others to purchase them. DLW/VP/SSJ

(d) *January 2001 running:*
The full MEGHA DAQ should be operational for this run. SSJ

Experiments are planned by Birmingham and Surrey groups, using $^{9}\text{Be}+^{9}\text{Be}$ reactions or similar, with quadrant-strip-CsI telescopes. In addition, NMC discussed possible use of beam time that had been approved to test MEGHADON neutron detectors. He had ordered 3 NIM modules from Warsaw for PSD of neutrons, but useful tests could proceed with or without these.

Extra quadrant detectors should be acquired before this running period. Staffordshire and Surrey would buy 5 each (details from MF). RPW,WNC

The general issue of keeping track of detector stocks was discussed; this is a recurrent issue. It was agreed to collate information from Birmingham, Surrey and York, and forward it to MF before 30 November. NS,DM,BH

MF would combine the data and disseminate it. MF

6. GANIL running plans:

(a) *Update on data analysis:*
MF tabled spectra from the July 1999 running with ^{16}C, which were included in a paper submitted for publication in PRC to probe cluster states in ^{16}C. WNC reported that the ^{17}C beam data originally intended for K. Jones' thesis would be analysed in LPC Caen, to reconstruct the unbound ^{16}B system. KLJ's thesis would comprise a more complete analysis of ^{13}Be from ^{14}Be breakup than was originally envisaged.

(b) *LISE-2000:*
MF reported regarding the 6 quadrupoles that Charissa committed to purchase. The schedule was very tight and based around the winter shutdown. A bid had been received that was within the available funds, and an order had been placed with SigmaPhi, Vannes, France.

(c) *ECLAN target chamber:*
A meeting had taken place at DL on 11 July, attended by MF, NMC, RCL, Simon Appleton and Ron Marl, and the Minutes were tabled.

An engineering drawing was tabled, which was a hybrid of the DeMoN chamber from Caen and the Charissa chamber at Strasbourg. Further information was required concerning the beam height in rooms D4 and D6 at GANIL. $\boxed{\text{RCL}}$

Advice was required concerning access to the bottom of the chamber and the cable feedthroughs. DLW would attend the next planning meeting. $\boxed{\text{DLW}}$

RCL reported that a meeting of DL staff at DL had discussed the control system. DL were anticipating that the chamber would be built, delivered and tested by August 2001.

(d) *Preamplifiers:*
NMC tabled a document describing the present preamplifier stocks. The GANIL modules are mounted in NIM modules with Lemo inputs and outputs. They use some of the 500 chips delivered from Geoff Moore (Paisley) at the end of September 2000. The cabling would require large numbers of patch panel adaptors and 600 had been purchased and were at Birmingham, to be assembled into panels for Strasbourg (160 channels) and GANIL. The tabled document will be put on the web server. $\boxed{\text{NMC}}$

(e) *Progress on approved experiments:*
WNC reported that the experiment to study ^{12}Be(p,d)^{11}Be was now being planned to use clover Ge detectors, and would not take place before March 2001. Meanwhile, the approved SPIRAL experiments to study ^{24}Ne(d,^{3}He)^{23}F and ^{12}C(^{8}He,^{12}Be$\rightarrow^{6}$He^{6}He)^{8}Be would need to have supporting material submitted to the current PAC.
Note added: The GANIL PAC decided at its meeting that *all* SPIRAL proposals that had previously been approved would need to be resubmitted as new proposals to the PAC envisaged for approximately July 2001.

(f) *Request from LPC Caen (Stephane Grévy) to borrow VXI ADC's:*
The collaboration had been approached regarding the possibility of loaning several of the recently acquired C-size VXI ADC's to the collaboration studying superheavy element production at GANIL. The request was for a loan up until the end of December 2000. In the interests of goodwill, a loan for this period was agreed, with the stipulation that the modules would be returned to the UK at the end of the period. $\boxed{\text{WNC}}$

7. Overview of publications:

MF reported concerning papers written at Birmingham: clustering in ^{10,12}Be (MF, resubmitted after referees' reports), clustering search in ^{16}C (P.Leask, resubmitted after referees' reports), states in ^{10}B (P.Leask, resubmitted after referees' reports), partial breakup widths in ^{24}Mg (MPN, rejected by PRL, being reassessed), ^{16}O^{16}O breakup of ^{32}S (N.Ashwood, submitted to PRC). Additional papers were planned, based on data from JTM (Argonne experiment) and MPN (^{12}C+^{12}C rainbow scattering).

WNC reported on Surrey papers: the two by NC and MS on ^{12}C^{12}C breakup of ^{24}Mg from ^{16}O targets, and α-transfer population of ^{28}Si$\rightarrow^{16}$O^{12}C, had been published in PRC. The MS paper on multi-hits in the gas-strip-CsI hybrids was published in NIM.

The S. Singer paper on the $^{24}Mg \rightarrow ^{12}C^{12}C$ angular distribution was accepted after extra work by MS, and the MS paper on spin assignments in ^{24}Mg and ^{28}Si breakup was submitted to PRC.

8. Any other business:

(a) *Additional experiment proposals:*
MF reported that BRF was planning a proposal to the next TRIUMF PAC for an experiment that would concentrate on astrophysical interest.

(b) *Colleagues leaving the collaboration:*
RAH (retirement) and ACM (new pastures) had formally left the collaboration after many years of productive collaboration, and were thanked for their efforts.

9. Exceptional agenda item:

Vote of thanks to Bill Rae, Charissa founder and guiding light

A spontaneous vote of thanks was proposed by DLW and seconded by MF, and unanimously supported by all present.

The collaboration expressed its thanks and appreciation for the enormous and essential contribution of Bill to the success achieved by the CHARISSA project: from the first experiments at Oxford, through the new beam line, telescope, preamplifier, amplifier and data acquisition design at Daresbury, and the new MEGHA detector and 320 channel DAQ system presently working at the ANU, plus the new theoretical results and techniques developed for the calculation of alpha-cluster structure and for reaction calculations … each has been enormously influenced by his input.

We say: "Thanks, Bill, we're behind you in whatever you choose to do."

W.N. Catford, Secretary. October 22, 2000 (released November 2, 2000)