Minutes

Charissa Group Meeting

Meeting held on: 23 February 1994

Meeting held at: Birmingham

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

Minutes

1. **Minutes of meeting of 5 January 1994:** accepted

2. **Matters Arising/ Actions:**

   All actions were reviewed and covered satisfactorily. Matters not arising later:

   - *Item 4(a)[v]:* MEGHA module may not be tested prior to shipment.
   - *Item 4(c)[vi]:* The report on PSD tests exists, but is still to be circulated as a Charissa report. DLW,WNC

3. **Update on NPC/SERC matters:**

   Our grant application appears to have been favourably received by the NPC and we can hope for a reasonable level of funding in the new grant period.

   Grant details will probably be finalised at the next NPC meeting on 8 March. The new grants commence on 1 Oct 1994, administered by the EPSRC.

4. **Progress with MEGHA development:**

   (a) *Prototype Module:* DLW tabled photographs of the completed prototype module. Scintillator mounts had required small changes because not all crystals satisfied the tolerances. A mount for the module in the 2m chamber at the ANU was complete. Grids were still to come from DL. All gas and scintillator signals, and signals from 1 or possibly 2 silicon detectors will be recorded in the ANU tests.

(b) *Chamber Design:* a MEGHA meeting had been held, and S. Metcalf was laying out a modified design for the main chamber, to allow for strip detectors to be mounted at 15cm from the target. This would be discussed at a further meeting on 2 March. Plans would be circulated to the collaboration for comment, before detailed design proceeded.

(c) *Detectors:* Bids had been received from Hamamatsu, Micron, Q–Par Angus and Intertechnique (Gresham Power Electronics). Canberra had been approached but had not expressed an interest. All were ion-implanted except Q–Par (surface barrier). The combination of performance, price and delivery presently favour Hamamatsu.

Intertechnique had suggested joint development work on design of sheet PSD's.

Tests of the Hamamatsu detector at the ANU would require Charissa amplifiers modified to $10\mu s$ time constants. The implications of signal arrival and generation times on the triggering would need to be considered.

After discussion, it was **agreed** to proceed with the purchase of one consignment of fifty $385\mu m$ thick detectors from Hamamatsu (£81K plus £14K tooling). Delivery should be by mid-June. $\boxed{\text{BRF}}$

Annealing of existing detectors was suggested by WNC, and it was **agreed** that projects to investigate controlled heating would be initiated at Birmingham, involving GRK. (See also Item 11.) $\boxed{\text{GT}}$

The thickness of dead layers in the strip and sheet PSD detectors was discussed. Some had been measured by alpha sources, others inferred from off-line analysis of reaction data. Details of these results and inferences should be circulated. DLW (S. Chappell) to collate and circulate.

$\boxed{\text{DLW,WDMR,MF}}$

(d) *Gas Supply:* this work was progressing as a lower priority.

5. **Progress with electronics:**

(a) *Preamplifiers:* DLW reported. Tests of the silicon and gas preamps from Oxford were completed at York. Beam tests at ANU planned for April.

Quotes had been received for the main manufacture. For 500 preamps, component costs were £3.5K, which breaks down to £7 per preamp board, £8 per motherboard and £21 for filtering/coupling boards.

Overall, the price per preamp channel would be approximately £10.

(b) *Amplifiers:* WDMR reported. A sketch layout of the new amplifiers was complete. Pairs of amplifiers would be housed in double-height single-width modules: a total of 160 modules for 320 channels. Shaping time was $2\mu s$. Gain, threshold and pole-zero were computer controlled with manual option. Switching used mercury relays. The sample-hold (or integrator) circuit plugged in at the back.

Any suggestions for changes in design should be notified urgently. $\boxed{\text{ALL}}$

(c) *Power Supplies:* DLW reported. Main units were 90% complete, with power supplies underway. Programming was complete. Aiming to test at the ANU in April.

6. **Progress with Data Acquisition:**

   (a) *ANU running March/April 1994:* The development of the FETCH module had given some difficulties, but was on schedule for March shipment. New system to be tested in Oxford by 4 March. $\boxed{\text{SJAH,RAH}}$

   The new TDC-based energy/timing system for 32 channels is proceeding slower than hoped. There will be 16 channels ready for March/April. It was **agreed** that the tests should employ the existing TDC units rather than the Lecroy 2277 units eventually to be incorporated.

   (b) *Other Developments:* it was **agreed** that the April tests should be assessed rapidly and a recommendation made on the suitability of the time conversion and TDC-based system. $\boxed{\text{MF,RAH}}$

   It was **agreed** that the next Charissa meeting should consider the April results and make a final decision on ADC purchases within the existing grant period.

7. **Status of plans for ANU running March/April 1994:** DLW reported that accommodation was booked for all participants, and shipping arrangements were proceeding.

   Equipment at Surrey that requires shipment should be sent to York. $\boxed{\text{GJG}}$

   Targets to be ordered from Daresbury for both York and Surrey runs. $\boxed{\text{CDJ}}$

   The strip detector stocks were reviewed. At the ANU: 6 used and 6 un-used Micron plus 3 Hamamatsu (some Micron detectors 1mm). To go with York personnel this time: 9 new Hamamatsu detectors. (See also Item 11.) $\boxed{\text{DLW}}$

   There would be no simultaneous two-tape writing of data on-line, so an efficient tape copying procedure was required. $\boxed{\text{SJAH}}$

   SJAH reported that an off-line sorting facility on the Solaris system would be available, employing display routines by SJAH and S. Singer.

   An example FORTRAN sort code should be sent to GJG & CDJ. $\boxed{\text{SJAH}}$

   A copy of the parameter file and any other available details for software setting od ADC thresholds should be forwarded to GJG and DLW. $\boxed{\text{SJAH}}$

   NMC reported that two ribbon-conhex distribution boxes for driving double strip-detectors were complete. A copy of the circuit should be forwarded to WNC to go on the file-server. $\boxed{\text{NMC}}$

   NMC reported that two new distribution boxes for single strip-detectors were nearing completion, and would need to be taken in hand luggage. $\boxed{\text{GJG}}$

8. **Provisional plans for ANU running July 1994:**
(correction from Agenda: should read July 1994 not August).

BRF tabled a discussion document outlining the proposed running period. This suggested the departure of equipment and personnel on 17 and 23 June, setting-up beginning 27 June and beam-time on 4 July. The Brisbane conference of the Australian Physical Society is in the week beginning 4 July.

Details of the experiments were discussed, and discussion would continue. An updated version of the tabled document should go on the file-server as Ch/Doc/94/05. BRF,WNC

9. **Status of Strasbourg Developments:**

BRF reported that the formal agreement covering the relocation of the Charissa beamline from the NSF to the Vivitron would be re-drafted. This follows a meeting in Strasbourg on 6 January (Ch/Doc/94/01) at which several details were clarified. JSL will liaise with Strasbourg personnel. The beamline and chamber were expected to be installed and available for approved experiments by December 1994.

10. **Spend on Grants:**

BRF tabled informal notes suggesting a breakdown for the current spend requirements between universities. There were no significant difficulties with the suggested scheme. It was **agreed** to make final decisions on the spend at the next Charissa meeting. BRF

11. **Detector Stocks:**

Detector stocks had been discussed briefly under Item 7. Further to this, RPW reported that there were 7 used Micron strip detectors at Birmingham. Thicknesses were 300, 500 and 1000μm. One of these would be sent to Surrey for use in tests. GJG
Some others could be used for the tests discussed under Item 4.3.

12. **SOPHIE and the SHEILAS:**

NMC introduced a document (Ch/Doc/94/06) outlining some ideas for detecting gamma-rays from reactions producing cluster states, where these cluster states had previously been investigated by the collaboration using just charged particle measurements. Various possible approaches were considered, and it was agreed that these should be explored further.

13. **Publications and Talks:**

Contributions to the forthcoming IOP Conference would come from JSP,NC and PMS (York and Surrey personnel away in Canberra).

The papers in the following table were discussed and agreed.

Experiment	Analysis	Description and Aims	ACTION
^{23}Na data	NSJ	PRC paper	DLW
^{16}O target	CDJ	PRC paper	CDJ
Texas data	JTM	Brief paper, consider linking to MJL data	BRF
Higher E_x ^{24}Mg	MJL	Brief paper, but see previous	BRF
Band termination	SPF	Brief report; see next	DLW
Spin at low E_{beam}	CDJ	Overlaps GJG paper; possibly absorb with previous.	CDJ
^{24}Mg+ ^{24}Mg	AStJM	Aim to set limit on $3\times^{16}$O	on hold
7–α	PMS	Resolve anomaly, report at IOP, finish sorting by July and start Letter or Brief Report then	WDMR
^{12}C+^{24}Mg	SMS	Sort ^{16}O+ ^{8}Be channel by July	WNC
LBL ^{16}O+ ^{8}Be	JSP	Paper for IOP; possibly write full paper in summer	BRF
High resolution	NC	Widths obtained, no spins. Brief paper.	NMC
^{12}C+^{12}C*	RPW	analysis needs 12 months	RPW
Ang distribution	SPC	recoil ambiguities and statistics problems; maybe indicates forward peaking; discuss further	DLW
Leddy detector	MJL	written up in thesis	BRF
Hybrid technical	NC,SMS	Data from first ANU running	NMC,WNC

14. **Any Other Business:**

    (a) *Charged Particle Working Party:* BRF reminded everyone of the meeting at Daresbury on 2 March to decide the need (or not) for a CPWP. ALL

    (b) *ANU talks:* MF, SC and SMS would give talks at ANU research meetings during the next visit. MF,DLW,WNC

    (c) *Hybrid Efficiencies:* GJG and SPF should meet with MF at Birmingham to discuss hybrid detector efficiencies. GJG,DLW,MF

15. **Date of Next Meeting:** 11.30 a.m., Wednesday, 27 April 1994 in Birmingham.

W.N. Catford, Secretary. March 1, 1994 (released March 2, 1994)