CH/Meet/92/03

Minutes

Charissa Group Meeting

Meeting held on: 11 June 1992

Meeting held at: Oxford

Present:	BRF(Chair),WNC,NMC,PVD,GJG,RAH,JSL,ACM,WDMR,DLW,JZ
Apologies:	P.V. Drumm, G. Tungate
Distribution:	Those present, plus RAC, PVD, GT and file copies to BRF, WNC.

Minutes

0. **Minutes of Meeting of 29 April 1992:** Accepted as a true record.
   Matters Arising:

   - Minutes of Charissa group meetings and other collaboration documents are now prepared and distributed by WNC in consultation with BRF. The possibility of a central server facility for distributing them electronically should be investigated. WNC
   - **NSF Proposals:** New proposals had been submitted as planned, namely 900 (WDMR, chains, 'double'), 903 (NMC, high resolution), 904 (DLW, angular distribution), 907 (BRF, chain decay) and 914 (WNC, tests).

1. **Update on NSC/SERC matters:**
   Grant letters had recently been received by university groups and must be collated and the funding summarized. BRF

   Funds awarded to the Charissa project in the new grant cannot be transferred to other headings, and will require authorisation from a project scientist and, most likely, Swindon before being committed.

   The Board structure of SERC will be reorganised, effective October 1993. Nuclear Structure is to be included with Particle Physics and Astronomy, and a proposed committee for this board includes us with atomic and plasma physics. The NSC meet on 22 September to provide input to the process of change, and also meet in mid-October to review forward looks.

2. **Report on Detector Tests at Daresbury Laboratory:**
The detector card index will be forwarded to Daresbury, together with the Birmingham detectors. The index will be updated to include new strip detectors and kept in the Detector Lab. $\boxed{\text{WNC,BRF}}$

There are various items requiring beam tests: new silicon (BRF), scintillator (NMC), electronics (RAH). Priority list to be established. $\boxed{\text{WNC}}$

WDMR expressed interest in the effect of the 470Ω series resistors added to the ends of the 1.7KΩ strips. Data on tape exists with this modification, and WDMR would like a copy. $\boxed{\text{DLW}}$

3. **Progress Report on Scintillator Detectors:**
NMC discussed a preliminary version of document CH/Tech/92/08 describing recent tests of a Quartz & Silice scintillator, using α's and γ–rays. Delivery of a Bicron detector, for assessment, is awaited. Tests are on course for orders in the next few months.

Summary of Tests: Detectors are 50 mm $\square\times$ 10 mm thick (range of 50 MeV p, or 200 MeV α) and taper over another 15 mm to the PIN diode glued on the back. Behind this is a 50 $\times$ 50 mm^2 PCB including a 20 $\times$ 15 mm^2 hybrid preamp, with a ribbon cable connector carrying $\pm$12V, 30V bias, test input, and 50Ω output with 50 μs tail time. The ribbon cable caused no problems.

For 5.5–5.8 MeV triple-α tests,signals were 32 mV into 1MΩ and resolution looked about 300 keV but the signal is very nonlinear. As low as 150 keV was achievable with a position-collimated source. For the tests, the shaping time was 2μs — 4μs gave better resolution but poorer γ–ray rejection. WDMR commented that a gated integrator may improve the γ–ray rejection.

NMC has a mount and cable, ready for beam tests with α's or ^{12}C.

4. **Progress Report on Silicon Detectors:**
BRF reported, with reference to the update report CH/Tech/92/07. Manufacturers appear to be very interested in the project, judging by the many visits by their reps. Arrival of a device from Intertechnique was imminent, and all designs for 2D PSD's should be ready for testing, which should be completed by the end of the summer. $\boxed{\text{BRF,WNC}}$

5. **Progress Report on Gas Detector Assemblies:**
JSL presented a schematic drawing from DL (AO-NSE/SC/138 Issue A, Stuart Metcalf, 21 May 92). Further details now needed to be provided on the silicon, scitillator, and hybrid preamp mounts. These were to be communicated via DLW, who liaises with J. Kay. $\boxed{\text{NMC,BRF,WDMR}}$

WDMR noted the desirability of mounting strip detectors in the same assemblies, perhaps using an alternative back plate with extra preamps occupying the usual scintillator space, and it was agreed to consider this further. $\boxed{\text{WDMR,DLW}}$

6. **Progress Report on Chamber and Gas System:**
JSL presented a conceptual drawing from DL (AO-NSE/SC/145, Issue A, Stuart Metcalf, 10 June 92). The chamber comprised a fixed ring in the vertical plane, carrying the services, plus two spun hemispheres of internal diameter 1.5 m. A frame (like Polytessa) would be mounted from the ring to support the detector modules.

   A wide-ranging discussion included several suggested modifications and alternatives. One was to have two service rings (an equator and a meridian), and another was a conventional chamber with a removable 'cheese wedge' around zero degrees to give access to forward detectors.

   The following were deemed to require urgent consideration: pumping (speed and mechanical support/vibration), detailed look at provision of sufficient feedthroughs (electrical – including strip detectors – and gas), ease of module removal and replacement, stability of beam collimation and target alignment. DLW

   WNC requested a file copy of the Paul Drumm document that was presented by DLW. DLW

7. **Progress Report on Electronics and Data Acquisition:**
R.A. Hunt reported:

   (a) Comments were sought on the document *New Bias Supply for Charissa* (Ch/Tech/92/09). The new bias supply crates would be locally switchable to give manual or computer control of biases. The computer would take over the compensation function from the analog electronics.

   The maximum voltage and current were decided to be 1000V (12 bit/ 0.25V resolution) and 100 μA.
   For preamps, 10 mV/MeV was considered a feasible gain for the gas detector signals, although results from forthcoming experience would need to be considered. WDMR,RAH

   DLW reported that Lecroy also have developed a compact compensating power supply for strip detectors. WDMR,RAH

   (b) RAH discussed the new document *Charissa Amplifier Development* (Ch/Tech/92/10). Each channel will give energy and time information by means of a logic output.

   Summary: Charge-to-time conversion is achieved using Lecroy MQT200F chips. As much electronics as possible will be sited at the chamber, with pairs of signals to be selectable in the counting room and linear or logic pulses viewed on an oscilliscope. The gain, threshold, pole-zero, gate period and time walk (for defining coincidences; presently 500 ns) will be selectable manually or by computer.

   (c) Some modified amplifiers are *ready for beam tests.*
   These have been modified by D. Savory at Oxford to include the MQT200F

time signal which can be fed to Lecroy 2277 TDC's (cf. Section 7 of Ch/Tech/92/10). RAH,WNC

(d) A meeting must be organised to decide purchases under the current grants.

BRF,WDMR

8. **Report on Hybrid Detector Tests:**
This was deferred as PVD was unable to be present owing to illness.

9. **Plans for Next Runs:**
Plans for manning the two Charissa runs on the current NSF schedule were discussed: (WNC: ^{12}C beam + ^{24}Mg) and (DLW: Band termination).

10. **Update on Recent Analysis:**
The high density of running time, combined with attendance at conferences necessitated a rescheduling of the planned Physics Meeting of the collaboration members, tentatively until the end of August. BRF

Contributions are expected from M. Leddy (high excitation), J. Pople (O-^{8}Be), A. Murphy (Mg+Mg), C. Jones (O target and low energy), G. Gyapong (yield curve) and P. Simmons (chain state).

11. **Document on Gain Matching and Calibration:**
WDMR commented on his note about experimental procedure (Ch/Doc/92/04). In some cases E versus P from gold scattering data can be used to derive corrections, but these should really be obtained using charge-terminator calibration of individual preamps.

12. **Future Plans:**

(a) Possible experiments in Australia (ANU): BRF had sent a letter to the NSF programme panel mentioning the ANU option for running proposals that might remain approved, but un-run, when the NSF is forced to close.

(b) Further USA (LBL) experiments: two highly desirable experiments need a neon beam, and BRF reported that LBL have expressed an interest in collaborating in two back-to-back experiments in 1993.
Two other laboratories (FSU and ANL) were also possible running sites.

(c) WDMR was invited to visit the Australian National University (ANU) to discuss Charissa physics and planned to leave on 8 September, for two weeks.

(d) 1994 and longer term: No reponse, yet, from Florent Haas to the proposal for joint French–UK collaboration in physics relevant to this collaboration's interests (Ch/Doc/92/05).

13. **Any Other Business:**

    (a) *Daresbury Support:* PVD would be moving to a post at CERN/ISOLDE at the end of July. JSL reported that Bob Cunningham (RAC), who has been working closely with Paul on Charissa development, would be in a position to take over the Daresbury contribution.
    The meeting requested BRF to write to PVD expressing thanks for his efforts. BRF
    RAC to be added to the circulation list for these minutes. WNC

    (b) *SERC Annual Report:* This will contain a short contribution about the group's work, by invitation (BRF).

    (c) *Physics World:* considering an article about chain states, perhaps 'Nuclear Sausages', following recent Phys. Rev. Letter (BRF).

    (d) *Research Assistantships:* GJG has been offerred a post at Surrey. BRF and NMC have written to labs in the USA and Europe regarding the RA and computing posts at Birmingham. DLW expected to be advertising the York post soon, in Europe and the UK.

    (e) *International Conference on Nuclear Conference, Wiesbaden:* DLW reported that two posters will be presented on Charissa work, following the acceptance of submissions by G. Gyapong and C. Jones.

14. **Date of Next Meeting:** 11.00 am* *Monday* 24 August 1992 † to be held at Birmingham, room E118‡.

W.N. Catford, Secretary.
August 6, 1992
(released August 13, 1992)

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*Changed(updated) in minutes: 11.30 mentioned at meeting

†*In addition* a meeting was planned for 8 July at Daresbury to decide on spending committments.

‡Changed(updated) in minutes: venue was to be decided