CHARISSA BEAMLINE AT STRASBOURG.

Status of the Beamline Equipment following the run in October 1996.

The beamline was started up after a fifteen month interval for the run beginning on October 21st, 1996. On October 20th the following work was carried out on the beamline equipment:-

1. Q85 Quadrupoles.

   Connections to the Q85 Quadrupole doublet were changed so that the first magnet would focus and steer horizontally and the second vertically.

2. Alignment.

   The telescope was set up on the line between the centres of the diagnostic box and the chamber entrance apertures. Others elements of the line, e.g. the slits, were seen to lie along this axis.

3. Diagnostic Box Aperture.

   The aperture in the diagnostic box was realigned as an 8.0 mm high x 3.0 mm wide aperture.

4. Target Angle Mechanism.

   The target angle mechanism was taken apart and a loose coupling found between the drive shaft and the shaft from the target ladder boss. This was tightened and the mechanism worked but with some backlash.

5. Earthing.

   The new floating earth electrometer was installed in the Beamline Control Rack Critchley crate and the signal cables from the chamber entrance aperture, collimator and anti-scattering aperture were connected to it rather than the Keithley 610.

6. X-Y Steerers.

   These were moved as close as possible to the downstream end of the diagnostic box.

7. Arm Drive Mechanisms.

   These mechanisms were found not to be working. The fault was traced to the Control System not supplying 12V to the motors on the arm drives.

On October 21st a 104 MeV ^{16}O beam was passed from the Vivitron through the diagnostic box aperture and down the line and focussed through a 2 mm x 2 mm scintillator aperture at the target position into the chamber Faraday cup. All elements of the beamline were seen to be working correctly although the first quadrupole had to be moved approximately 1mm sideways so that little steering was necessary in either magnet. On October 22nd and 24th beams of 84 Mev ^{16}O and 50 MeV ^{7}Li were passed down the line and the magnet settings found to scale with the relative NMR readings for the analysing magnet. Further details of these tests can be found in reports to be issued by S.Chappell and J.Lilley.

However the following faults exist in the beamline equipment:-

1. Vacuum System

   (a) The pendulum valve, VA633, above the beamline turbo pump is leaking badly. This means that that pump must be stopped before the line can be let up to atmosphere and this will cause delays in this procedure.

   (b) The gate valves VA635 and VA636 are leaking slightly. The pressures at the turbo pumps with the valves closed rise from 10^{-7} to 10^{-4} torr when the chamber is let up to atmospheric pressure. The pumps are not heating up but the leaks should not be allowed to become any worse.

(c) Several thermocouple gauges in the vacuum system are not working. The gauge controllers do not seem to be at fault. Further gauges are required on KF25 and KF40 flanges.

(d) Some LEDs and bulbs in the Pumping System Controller are not working. These need to be replaced when the control system is not in use.

2. Diagnostic System

(a) The beam scanner is not working. The scanner drive unit, BPM519, would need to be returned to DL if the scanner is wanted and investigations need to be carried out.

(b) The digital readout on the vertical steerer power supply is not working. The power supply is however operational. A spare DPM8100 readout will have to be purchased.

(c) The Brookhaven BCI is not integratinging the current received. The unit would need to be returned to DL for investigation. Circuit diagrams are available at DL.

(d) Use of the floating input electrometer in the beamline control rack for the chamber diagnostic signals reduced the pickup caused by connecting the beamline and chamber earths in the Keithley 610 by a factor of 20. However the unit had to be repositioned in one of the electronics racks to completely eliminate this pickup. A repeat meter should be supplied and placed in the control rack near the BCI repeat meter.

(e) A new 9 inch TV monitor is required for the Beamline Control Rack.

3. Scattering Chamber and Control System

(a) The backlash in the target angle mechanism should be eliminated if the coupling is reconnected without tightening the grub screws into the holes in the two shafts.

(b) The drive unit for the arms in the Control System needs to be repaired.

(c) RG178 Conhex cables are required from the arms to the feedthrough flanges in the base of the chamber. These are to be made at York.

(d) Bulkhead panels for the cables at the arms and to convert from Conhex to BNC outside the chambers are available and will be given to J.Lilley for fitting.

4. Beamline

(a) The section of the beamline upstream of the diagnostic box is removed to check the alignment of the telescope. It should be removed by unbolting the flanges before the beamline adaptor and at the entrance to the shield wall. At present a diamond edge seal is used at the first of these two flanges and this should be replaced by a 100 mm coseal which is reuseable.

Of this work only the repair of the Chamber Control system and the BCI as well as the installation of the bulkheads is necessary before an experimental run could be carried out on the beamline.

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