

Minutes of the AGS Radiation Safety Committee

Tuesday, April 16, 1991

Present: A. Carroll, A. Etkin, J.W. Glenn, H. Gordon,
W. Lambertson, E. Lessard, A. McGeary, S. Musolino,
K. Reece, J. Scaduto, J. Spinner, S.P. Yamin

Subject: A3 Beam Line

A. Carroll (Liaison Physicist) described the A3 beam line which has been modified slightly to form a secondary beam line from 0 to 20 GeV/c and for heavy ion running. Its primary purpose is to provide a test beam for SSC calorimeter studies. This spring Exp. 821, the g-2 experiment, will undertake a short single bunch extraction run to test the response of their electron detectors to the "hadronic flash".

For both of these tests, the beam flux will be limited to less than 2×10^6 particles/cm²/sec so that this fenced area will be a Class III radiation area. Dual NMC paddles will prevent the beam from going above this limit. The beam area is 6 cm² and the repetition rate is 3 seconds, so that the total beam rate at maximum intensity is 4×10^7 which is more than adequate for the SSC tests, and acceptable for the g-2 tests.

The beam stop without the SSC calorimeter in place is more than adequate for side shielding with 10^7 particles incident (less than 0.1 mrem/hour). The estimated muon leakage rate is 8 mrem/hour at the back of the stop for 10^7 particles in the beam for 10 to 20 GeV/c. This needs to be measured. Additional iron can be placed at the back of the stop if necessary.

The SSC calorimeter and the iron stop for the g-2 tests represent several interaction lengths. For 10^7 incident, and the beam scraping the edge of the calorimeter, the radiation level at the east fence is estimated to be 4 mrem/hour. This needs to be measured.

Negative Polarity

Requirements and Fault Studies:

1. Red Tag A1D1 and A1D2 in B (negative) polarity (CK-A3).
2. Set dual NMC units for Class III level - 4×10^7 particles/pulse (CK-A3).
3. Measure muon flux behind dump for 10 GeV/c for 10^7 particles (CK-A3).

4. Measure maximum radiation levels at fence with calorimeter centered and with beam scraping the edge. Must be less than 10 mrem/hour at 4×10^7 /pulse (CK-A3).

Positive Polarity

1. Red Tag A1D1 off and reverse polarity (B) (CK-A3-positive).
2. There will be dual setpoint limits on A1D2 for 16 GeV/c (CK-A3-positive).
3. Set dual NMC units for Class III level - 4×10^7 particles/pulse. If negatives done first, use that result (CK-A3).
4. Measure maximum radiation levels at fence with calorimeter centered and with beam scraping the edge. Must be less than 10 mrem/hour at 4×10^7 /pulse. This will be insured by an interlocking chipmunk near the beam line. If negatives done first, then use that result (CK-A3).
5. The g-2 target must be signed and tagged DO NOT REMOVE for g-2 SBE running. Chipmunk must be located near the target and measurements done to determine placement so that the beam is limited to 4×10^7 /spill (CK-A3).

mvh/minutes.met

Attachment (file only)

#1-Radiation Safety Analysis for A3 Beam Line (A. Carroll, 3/22/91).

Distribution: Radiation Safety Committee
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Others Present at Meeting
AGS Main Control Room