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PROJET OF e_7 BEAM LAYOUT AFTER THE SHUT-DOWN 1969

Dicusssions with the members of the group proposing the s_5 beam and the ejection study group led to the layout as sketched in this note.

Basic assumptions and constraints

1) The beam line of the present e_5 beam and the position of the target p_4/p_5 should remain unchanged, in order to restrict the transformations of the East Hall layout, including the shielding to a minimum. This seems necessary, if the main part of the work is to be executed during the time of the shut-down.

2) The first focal point for the H_2 target should be as far as possible upstream (in order to make use of the existing installations for the H_2 target inside the ring and to provide space for the production angle variations of s_5 in the ring area.)

3) The optics of the e_7 beam layout has to be planned to transport 26.9 GeV/c protons.

4) The beam elements of the ejected beam and the s_5 beam must be positioned to allow for a production angle for the s_5 beam of 12.5 mr in the first part and 35 mr outside the ring area (see figure).

5) A test beam for machine studies should be accommodated inside the ring area, since the test zone used up to now has to be given up.

In the attached figure a layout is shown, which meets the requirements mentioned above. This project is not regarded as final and should only serve as a basis for further discussions.

e_7 Line

The e_5 line is unchanged downstream of M 200 (in front of the H_2 target). The bending angle of the e_5 line (32.673 mr) is divided proportionally between M 150 and M 200. The line of the test beam is obtained by the bending given by MC 200 (36 mr) and M 200 (37 mr).

Optics

Focal points are at the following positions : H_2 target, TV 5 and p_4/p_5 target.
The first two lenses (Q 120, ∅ 10 cm) are common for the e_7 beam and the test beam. The optics is planned for 26.9 GeV/c protons.

Targets and Observations

TV 2 : TV 2 and screen box remaining unchanged,
TV 3 : TV 3 and screen box (vacuum),
TV 4 : equipped as TV 3 in the present layout (test zone),
TV 5 : TV 5 and screen box (vacuum) Radelin, ZnS and plastic screen,
TV 6 : p_4/p_5 targets, screens equipped as present (TV 7).

Monitors

Three secondary emission chambers positioned as indicated in the figure.

Vacuum

∅ 10 cm vacuum tube for the first part (down to MC 200). A vacuum tank behind H_2 target (special) is delivered by NP. ∅ 20 cm vacuum tube continues behind the second MNP down to the target p_4/p_5.

The magnet M 200 requires a special vacuum tank, however, a beam passage through air in M 200 could be envisaged.

Beam Stoppers

The position of the beam stoppers of the e_7 line is indicated in the figure.

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