Movements of heavy detectors in COMPASS

version 1.00

gkm

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We first consider the necessary movements of the polarised target and the spectrometer magnets.

1 The polarised target

Although in the beginning we tried to avoid a movement of the polarised target (P.T.) it now seems for several reasons attractive.

1. For the hadron programme the dilution refrigerator (D.R.) has to be removed from the solenoide. Also the large and delicate exit window has to be removed. This is necessary in order to minimize the material in the beam.

2. The central production target hardly fits into the space between P.T. and SM1. A placement of this 60 cm liquid hydrogen target in this region would require the bending of all light guides of the TOF barrel by 90°. In addition the LH2 target needs to be supplied through the solenoide bore!

3. The P.T. obstructs the access to the SM1 magnet. It is unclear how the foreseen change in the aperture from 1.52 m (muon 100 GeV) to 1 m (hadron, muon 200 GeV?) can be performed under this geometry.

The only solution to avoid these complications is to move the polarised target out of the beam region. The latter two points could also be solved by

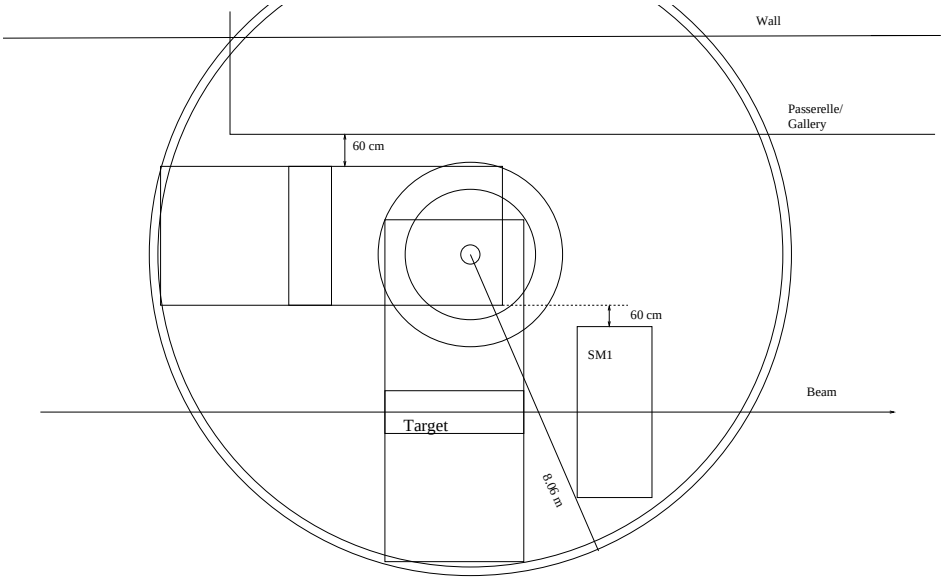

Figure 1: proposed rotation of the polarised target platform.

moving the whole spectrometer downstream. However, still the D.R. has to be evacuated!

To free the space in front of SM1 (point 3) a lateral movement in the order of 6 m is required. Given the dimensions of the platform (about 8.5 m x 3.2 m) and the hall such a movement is impossible. However, a smaller lateral movement could at least satisfy point 1. In such a solution, the central-production target must be installed on the target platform.

A possible solution is the rotation of the P.T. platform as sketched in Fig. 1. The pivot point was chosen such, that there remains a free space of 60 cm perpendicular to the beam between the SM1 magnet and the platform as well as the platform and the gallery, when the platform is in the garage position. It is located 67 cm and 128 cm from the platform boundary.

The mechanical structure is presently being studied. No big rails will be needed for such a rotation.