2.4.5.2 Description of a chamber

One chamber is divided into two semi-circular shaped 'half-chambers', each one being made from a mosaic of rectangular elementary CSCs (slats) located on two parallel levels in the z direction, with a vertical (y) overlap between the slats of 15 mm. This design avoids dead areas (there are 'shadowed' areas instead of dead areas). The different levels are achieved by the use of a mechanical support frame, with slats mounted on both sides of the frame. The instrumented active area will range from 2° up to 10° ($R_{\max}$ = 2202 mm for Station 4 and $R_{\max}$= 2566 mm for Station 5). Dead zones around the beam shielding will extend over a square of X $\times$ Y = 670 $\times$ 800 mm for both stations. If necessary, small modules with a circular cutout can be produced to avoid any deadspace around the beamshield.

The whole concept is based on five different slat lengths; the cathodes of these slats are made of the assembly of 400 $\times$ 600 mm^2 elementary PCBs on which the readout pads are etched, with a sensitive area of 400 $\times$ 400 mm^2 (see Fig. 2.119). The total number of PCBs is 1152 (see Section 2.2.5.1). The

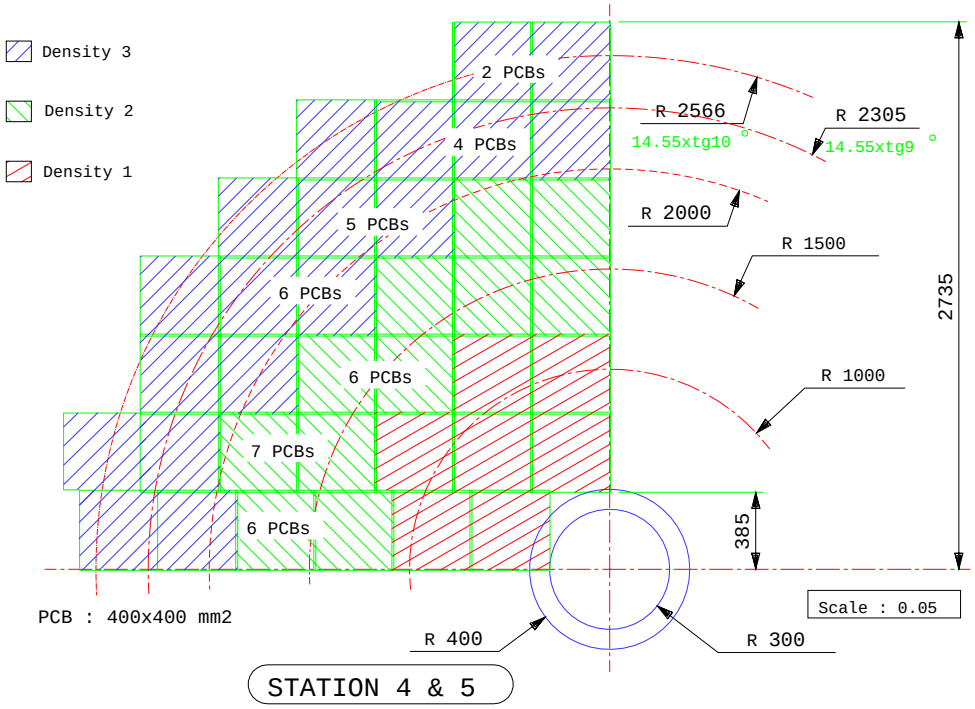

Figure 2.119: Front view of one quarter chamber with the slat geometry. The PCB layout inside the slats is also shown.

total number of slats is 112 (16 slats with 7 PCBs, 48 with 6 PCBs, 16 with 5 PCBs, 16 with 4 PCBs and 16 with 2 PCBs). Including spares, the total number of slats to build is roughly 130.

2.4.5.3 Mechanical description of a module

PCBs are aligned and glued on a lightweight, all-in-one-block carbon–Rohacell–carbon sandwich (see Fig. 2.120). The elements of this sandwich are described in the following.

Anode wire length and slat width. 'Transparent' modules means 'thin' modules built from lightweight materials, which may be possible if maximum width of a module remains below 600 mm, taking into account that longer wires means larger loading on the mechanical structure. Another reason to limit the length of wires is to avoid the use of wire supports, which means less manpower during construction and a better efficiency in the sensitive area. The main chamber parameters are summarized in Table 2.26.