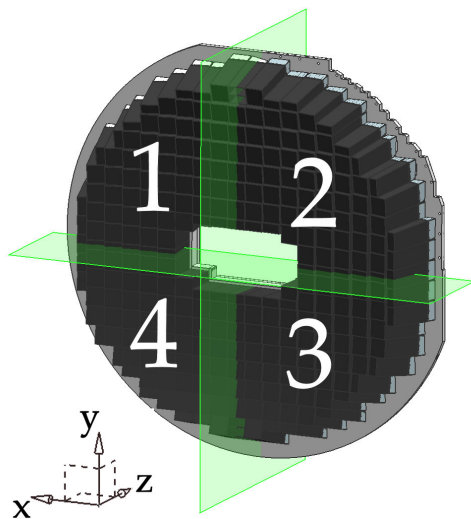


Every position of a crystal in the Forward Endcap has to have a clear code for everyone to understand in which quadrant, which subunit and which position inside a subunit the crystal has to be placed. So we have to assign certain symbols for the quadrants, subunits and positions inside a subunit, which are shown below.

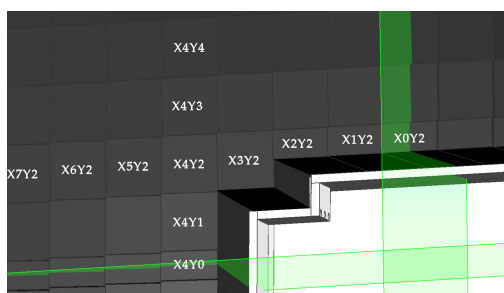
Looking downstream from the interaction point, the x-axis is pointing left, the y-axis upwards and the z-axis in the direction of the beam.



The quadrants of the Forward Endcap are numbered clockwise beginning in the upper left corner. The symbol for the code is therefore one of the following

1, 2, 3, 4

Figure 1: *The numbering of the quadrants*

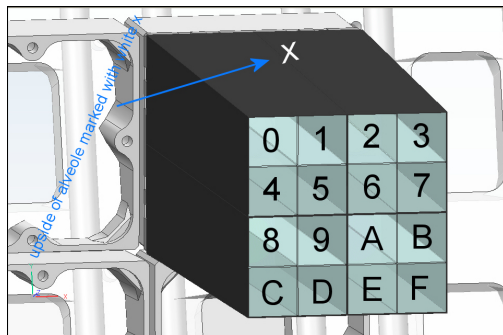


The subunits are numbered due to their order in x- and y-direction, beginning in the middle of the endcap. Written in the position code that is for example

X4Y3

The green planes illustrate the borders of the quadrants.

Figure 2: *The numbering of the subunits*



The crystal positions are numbered in hexadecimal code, because we are lucky to have exactly sixteen possible positions inside a subunit. Each alveole has a label with its serial number; if there is no label, we mark an arbitrary side with a white X. The labelled or marked side is the one which we from now on call the *top* side.

Figure 3: *Numbering the crystals*

Now that we have defined the top side, the first crystal in the upper left corner gets the number 0, the next crystal to the right gets number 1, and so on.

Example:

Subunit X0Y2 exists twice in the forward endcap: one time above and one time below the x-z-plane. Because it overlaps two quadrants (depicted in Figure 2, namely quadrant 1 and 2), only

1-X0Y2-0, 1-X0Y2-1, 2-X0Y2-2, 2-X0Y2-3,
1-X0Y2-4, 1-X0Y2-5, 2-X0Y2-6, 2-X0Y2-7

are valid crystal positions. Subunit X0Y2 in quadrant 1 doesn't contain a crystal with number 3, because this one belongs to the same subunit (so far so good), but to a different quadrant.

The same thing holds true for subunit X4Y0:

1-X4Y0-0, 1-X4Y0-1, 1-X4Y0-2, 1-X4Y0-3,
4-X4Y0-4, 4-X4Y0-5, 4-X4Y0-6, 4-X4Y0-7

are valid crystal positions.