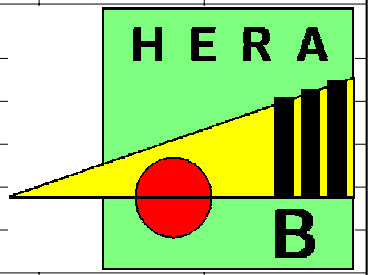
# z -positions of the detector components




All coordinates are given in the HERA-B coordinate system (dimensions in mm).

The z-axis is parallel to the proton axis, which is rising with respect to the horizontal floor of the hall by 8,03 mrad.

z=0 is about the position of the target wires. The exact position is defined with respect to the coordinate system of the HERA ring: HERA-B(z=0) = HERA(s=WR 9000)

MS01 - MS15: Inner tracker modules

MC, PC, TC: Outer tracker modules

**Modifications:**

-2

| | |
|---|---|
| 08.05.2001 | Orientation of ITR layers corrected |
| 29.06.2001 | MC5 removed |
| 16.11.2001 | Decision to remove all magnet chambers except MC1, MS01. MC2, MC3 and MC4 have been retracted, MC6 and MC8 removed |
| 16.11.2001 | New target configuration |
| 10.12.2001 | Geometry of Muon chambers corrected by B. Fominykh |
| 14.12.2001 | Y-acceptance of outer PT1 changed acc. To A. Schwartz |

# Vertex vessel

Rotated with respect to the floor by 8 mrad

| Tracker element | Detector element | dZ | $Z_{begin}$ at beam axis | $Z_{end}$ | Z of center of superlayer | Z of center of top&bottom | Z of center of left&right | |
|---|---|---|---|---|---|---|---|---|
| | Vertex front flange A | 251 | -896 | -645 | | | | |
| | Vertex front flange B | 32 | -645 | -613 | | | | |
| | Vertex vessel | 2613 | -613 | 2000 | | | | |
| | Center t&b target flange | | -158 | | | | | |
| | Center l&r target flange | | -138 | | | | | |
| Layer 1 | Q0, Q6, Q9: s.s.; d.s.; Q3 d.s.,d.s. | s.s. = single sided Si-strip detectors | | | 86 | 76 | 96 | |
| Layer 2 | | d.s. = double sided Si-strip detectors | | | 139 | 129 | 149 | |
| Layer 3 | | | | | 208 | 198 | 218 | |
| Layer 4 | d.s.; d.s. | | | | 382,5 | 372,5 | 392,5 | |
| Layer 5 | d.s.; d.s. | | | | 620,5 | 610,5 | 630,5 | |
| Layer 6 | d.s.; d.s. | | | | 998 | 988 | 1008 | |
| Layer 7 | d.s.; d.s. | | | | 1519 | 1509 | 1529 | |
| | Vertex exit flange | 55 | 2000 | 2055 | | | | |
| | Screws of flange | 13 | 2055 | 2068 | | | | |
| | Al beam pipe | 12343 | 1927 | 14270 | | | | |
| Layer 8 | d.s.; d.s. | | | | 2037 | 2044 | 2030 | Si8 pos. is not well known |

| z-coordinate in | Dist. to entrance | HERA-B system | Target wire ($\mu$m) |
|---|---|---|---|
| Target station: I inner | 635 | -4 | W, 50 ∅ |
| Target station: I outer | 635 | -4 | Ti, 50 ∅ |
| Target station: I above | 632 | -7 | Al, 50 * 500 |
| Target station: I below | 632 | -7 | C, 100 * 500 |
| Target station: II inner | 594,5 | -44,5 | C, 100 * 500 |
| Target station: II outer | 594,5 | -44,5 | C, 100 * 500 |
| Target station: II above | 592 | -47 | Pd, 50 ∅ |
| Target station: II below | 592 | -47 | Ti, 50 ∅ |

# Magnet platform

Rotated with respect to the floor by 8 mrad

All detectors are oriented perpendicularly to the beam line, i.e. they are rotated by 8 mrad with respect to the floor,
Y accept. = dimensions of active volume.

| Tracker element | Detector element | $dZ^0$ | $Z^0$begin at beam axis | $Z^0$end | Y accept. | Inner p cut-out | $dZ^F$ | $Z^F$begin z pos. of frame | $Z^F$end |
|---|---|---|---|---|---|---|---|---|---|
| MS01 | 0 -5 0 +5 | 85 | 2091 | 2176 | ± 235 | Ø 65 | | | |
| MC1 | + 0 - | 95 | 2186 | 2281 | ± 480 | | 225 | 2075 | 2300 |
| | Magnet front | 300 | 2300 | 2600 | | | | | |
| PT1 inner | | 95 | 4618 | 4713 | | 96x96 | | | |
| PT1 outer | | 76 | 4730 | 4806 | ± 688 | | 146 | 4730 | 4876 |
| PT2 inner | | 95 | 5558 | 5653 | | 115,4x115,4 | | | |
| PT2 outer | | 76 | 5673 | 5749 | | | 146 | 5673 | 5819 |
| PT3 inner | | 95 | 5978 | 6073 | | 133x126,4 | | | |
| PT3 outer | | 76 | 6080 | 6156 | | | 146 | 6010 | 6156 |
| | Magnet end | 400 | 6400 | 6800 | | | | | |

# Central platform

Rotated with respect to the floor by 8 mrad

All detectors are oriented perpendicularly to the beam line, i.e. they are rotated by 8 mrad with respect to the floor, even the inner and outer tracker superlayers.

| Tracker element | Detector element | $dZ^0$ | $Z^0_{begin}$ | $Z^0_{end}$ | $dZ^F$ | $Z^F_{begin}$ | $Z^F_{end}$ | Inner p cut-out | Inner $e^-$ cut-out |
|---|---|---|---|---|---|---|---|---|---|
| | | at beam axis | | | z pos. of frame | | | | |
| | Platform | 8080 | 6600 | 14680 | | | | | |
| MS10 | 0 0 -5 -5 0 +5 +5 0 | 158,4 | 6847 | 7005 | 170,6 | 6840 | 7011 | Ø 115 | |
| PC1 | 0 - 0 + + 0 0 - - | 286 | 7021 | 7307 | 310 | 6972 | 7282 | | |
| MS11 | 0 -5 0 +5 | 72 | 7335 | 7407 | 84,8 | 7328 | 7413 | Ø 115 | |
| PC2 | 0 + 0 - 0 + | 241 | 7423 | 7664 | 260 | 7403 | 7663 | | |
| MS12 | 0 -5 0 +5 | 72 | 7691 | 7763 | 84,8 | 7684 | 7769 | Ø 115 | |
| PC3 | 0 + 0 - 0 + | 241 | 7779 | 8020 | 260 | 7759 | 8019 | | |
| MS13 | 0 0 -5 -5 0 +5 +5 0 | 158,4 | 8052 | 8210 | 170,6 | 8045 | 8216 | Ø 115 | |
| PC4 | 0 - 0 + + 0 0 - - | 286 | 8226 | 8512 | 310 | 8177 | 8487 | | |
| | RICH | | | | 3217 | 8530 | 11747 | Ø 240 | Ø 120 |
| MS14 | 0 0 -5 -5 +5 +5 | 128 | 11779 | 11907 | | | | Ø 206 | |
| TC1 | ++ 00 -- | 195 | 11922 | 12117 | 350 | 11870 | 12220 | | |
| | TRD | 740 | 12162 | 12902 | | | | Ø 210?? | |
| MS15 | 0 0 -5 -5 +5 +5 | 128 | 12916 | 13044 | | | | Ø 206 | |
| TC2 | ++ 00 -- | 195 | 13058 | 13253 | 350 | 12940 | 13290 | | |
| | ECAL | 860 | 13310 | 14170 | 860 | 13310 | 14170 | 209,4x209,4 | 202,9x202,9 |

# Muon platforms

Rotated with respect to the floor by 8 mrad

**Attention:** The following dimensions of the absorber plates are the design values. The slits for MU1 and MU2 frames as determined by the survey group are as follows:

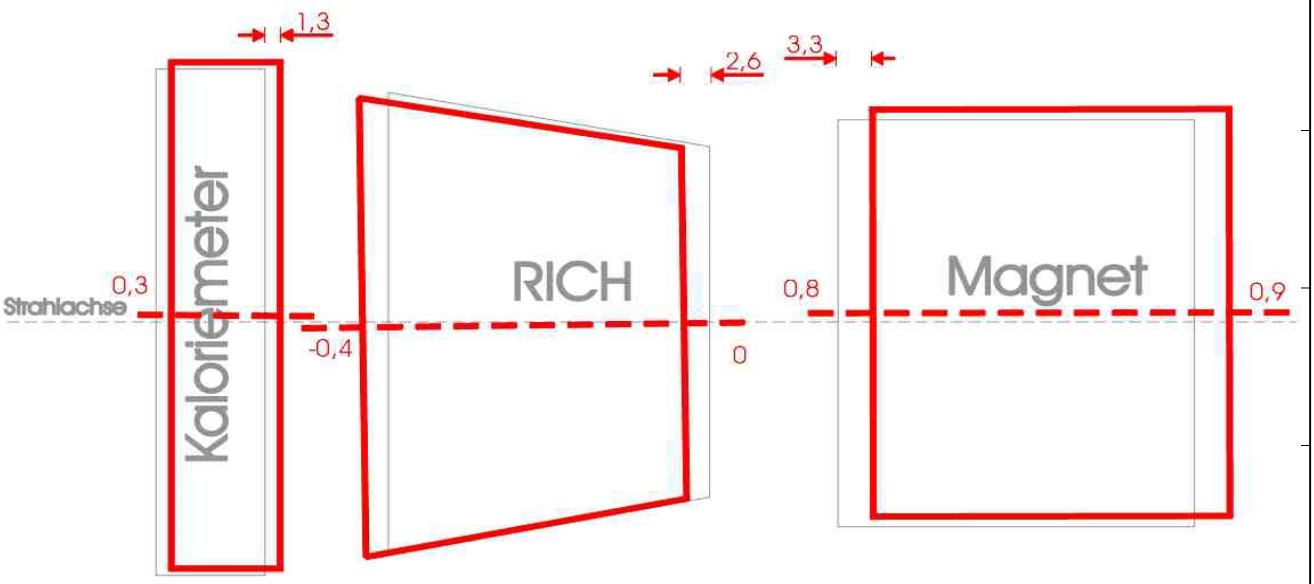
**MU1: 373 mm** (design 385 mm) **MU2: 287 mm** (design 315 mm)

| Muon Chamber | Absorber element | $dZ^0$ | $Z^0_{begin}$ | $Z^0_{end}$ | $dZ^0$ | $Z^0_{begin}$ | $Z^0_{end}$ |
|---|---|---|---|---|---|---|---|
| | | Absorber, Frames | | | Chambers | | |
| | Platform | 3800 | 14900 | 18700 | | | |
| | MA1-1 absorber | 330 | 14900 | 15230 | | | |
| | MA1-2 absorber | 330 | 15230 | 15560 | | | |
| | MA1-3 absorber | 330 | 15560 | 15890 | | | |
| | MA1-4 absorber | 225 | 15890 | 16115 | | | |
| MU1 tube | | 310 | 16167 | 16477 | 220 | 16138 | 16358 |
| MU1 pixel | | | | | 110 | 16367 | 16477 |
| | MA2-1 absorber | 225 | 16500 | 16725 | | | |
| | MA2-2 absorber | 330 | 16725 | 17055 | | | |
| | MA2-3 absorber | 330 | 17055 | 17385 | | | |
| MU2 tube | | 247 | 17434 | 17681 | 155 | 17404 | 17559 |
| MU2 pixel | | | | | 104 | 17581 | 17685 |
| | MA3-1 absorber | 330 | 17700 | 18030 | | | |
| | MA3-2 absorber | 330 | 18030 | 18360 | | | |
| | MA3-3 absorber | 330 | 18360 | 18690 | | | |
| MU3 pad | | 200 | 18791 | 18991 | 113 | 18765 | 18878 |
| MU3 pixel | | | | | 110 | 18891 | 19001 |
| | MA4 absorber | 50 | 19077 | 19127 | | | |
| MU4 pad | | 200 | 19565 | 19765 | 113 | 19539 | 19652 |
| MU4 pixel | | | | | 110 | 19665 | 19775 |
| | MA5 absorber +x | 50 | 19821 | 19871 | | | |
| | MA5 absorber -x | 50 | 19891 | 19941 | | | |

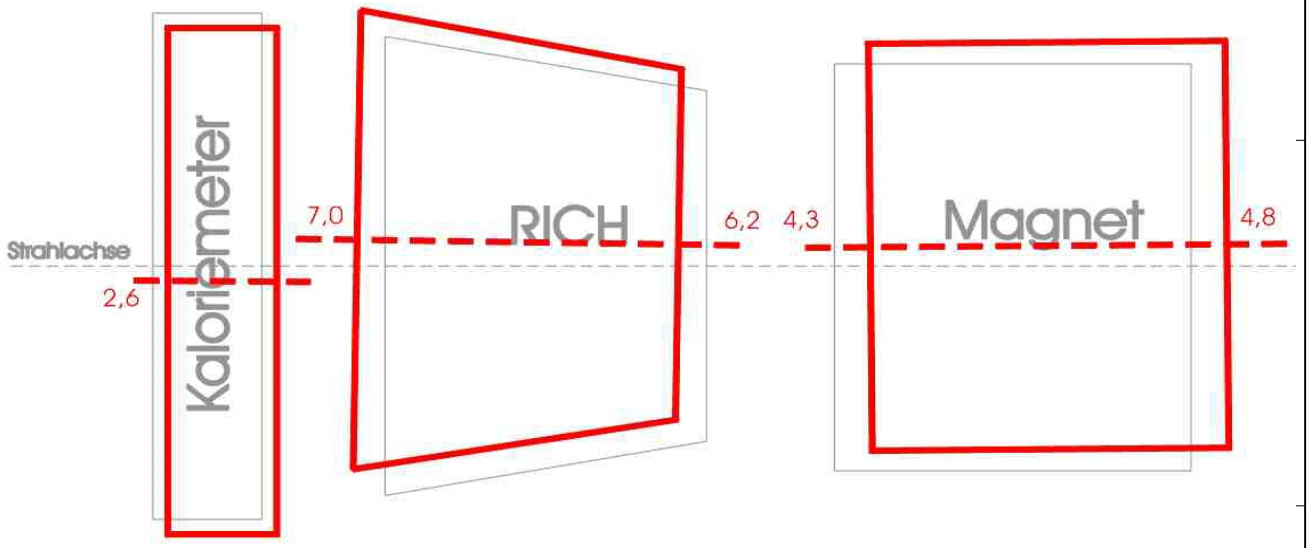
HERA-B

# Ergebnis der Einmessung nach Justierung im Strahl vom 12.06.2001

Seitenansicht (Skizze): [mm]




Draufsicht (Skizze): [mm]




28.11.01
W. Benecke, ZMEA2

hera-b120601.cdr