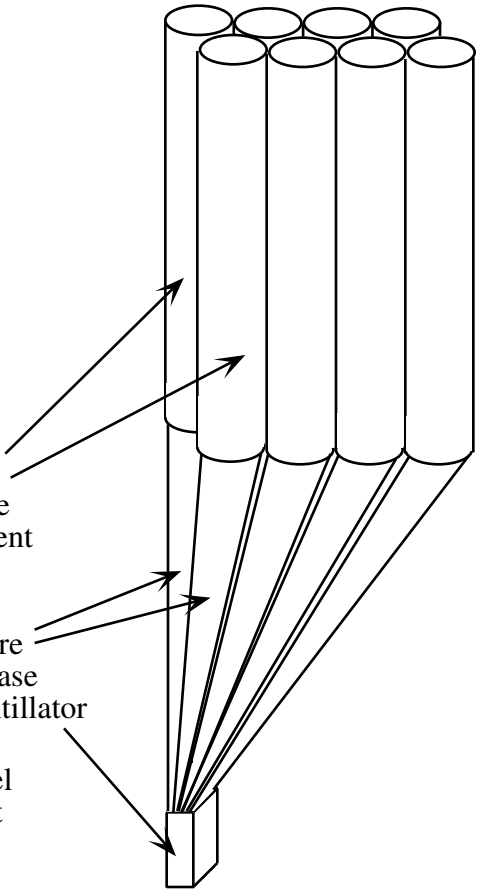
# Etagg44 upgrade (96/97 shut down)

As follows from the experience of the 1996 it was not possible to reach a good total efficiency for the ET44 Finger Counters (FC44) till end of 96 data taking. Bad noise conditions and big light losses in "air" light guides have forced to simultaneous increasing thresholds and HVs up to enormous values that finaly produce an overheatihg of the detector without any significant total efficiecy bettering .
To improve the FC44 liability in 97, the following changes have been implemented during 96/97 shut down:

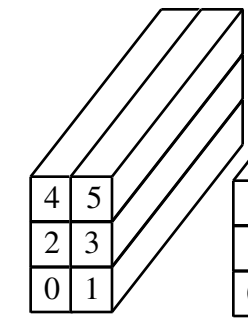


1. PM bases have been replaced by anothers with much less power consumption to reduce the detector overheating . An averaged current per channel became ~0.5mA (1500 V) that is in factor two less than it was before.

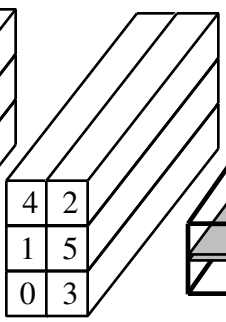
2. The additional plexiglass light guides were builded in the old "air" light guides to increase the light collection efficiency from the scintillator plates.

3. A new grounding was found for the tunnel electronics . The noise level after that went down by factor 3.

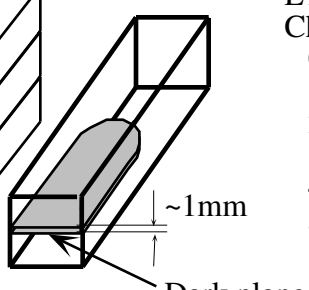
Inspection of the ET44 KRS crystals transparency has displaied that collecting 10 pb-1(95) and 15 pb-1(96) of integrated luminosity in the H1 IP have leaded to a visible darkness of the crystals that were most irradiated by the positron beam. In fact crystals # 2, 3 have loss more than 10-20% of their transparency. And in addition in the crystal # 2 has occured a rather dark plane with sizes corresponding to the positron beam profile at the working ET44 position ( 20mm width and ~1mm thickness ). A new layout of the crystals was made to remove the dark cells from the mostly workig ET44 region.
To reduce the currents on the last PM dinodes and hence improve the PM's gain stabilities the tunnel preamplifier gains were increased by factor two and corresponding HV set was updated to keep the total channel gains unchangeble. The old and new HV sets are listed elsehere.




Crystal layout 95-96.




Crystal layout 97




Crystal# 2

| ET44 HV 95-96 Ch # | ET44 HV 97 Ch# |
|---|---|
| 0 - 1400V | 0 - 1310V |
| 1 - 1650V | 1 - 1590V |
| 2 - 1650V | 2 - 1610V |
| 3 - 1700V | 3 - 1630V |
| 4 - 1700V | 4 - 1600V |
| 5 - 1650V | 5 - 1550V |