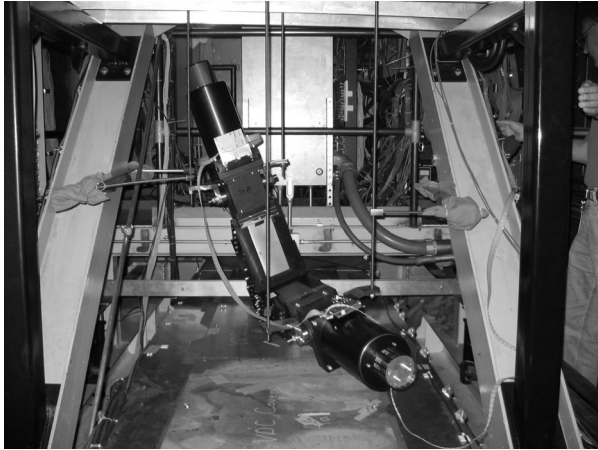


PROCEDURE TO REMOVE JACK'S FAVOURITE DETECTORS FROM THE HRS

The HAPPEX detector setup as it is now in the HRS detector hut:



The position and orientation in space is fixed by the four vertical rods and the three horizontal ones. The scattered electrons are coming from the back of the picture with a 45 degrees vertical angle.

1/ Remove the PMT of the horizontal segment (base + black cylinder around the PMT). Caution: the PMT window stands few mm outside of the black cylinder. When you are close to the end of the thread of the black cylinder, take care the PMT window doesn't hit the mechanics. Protect the PMT window with a plastic cover taped on the mechanics around the PMT. Protect the inside of the detector with a plastic cover taped at the end of the light guide.

The vertical PMT is reachable only in the left arm. For the one in the right arm follow the procedure till item **10/**.

2/ Install the downstream transverse aluminium rail.

Distance from the upstream rail is on Alan's drawings.

3/ Mount the side plates of the cradle on both sides of the detector. Install the spacer tube between the two plates. Tighten the outer screw on each axis.

4/ Mount the vertical spacers and the carts on the positioning rails (black rails in left arm, blue rails in right arm). Install the rails on both sides of the detector, check on drawings to know which rail goes on which side.

A hoist + sling are useful to hold one end of those heavy rails above the focal plane and then slide it until both ends are above the transverse aluminium rails.

Then lower the positioning rail using the hoist until the two carts are on contact with the aluminium rails.

5/ Push the rails against the bearings of the detector cradle.

6/ Make sure the lateral face of all bearings is well on contact with the rails which then should be parallel to each other. The lowest points of each bearings should be few mm above the rails because the detector was lifted by the vertical rods. Fix the distance between the rails using horizontal spacers tightened to the carts.

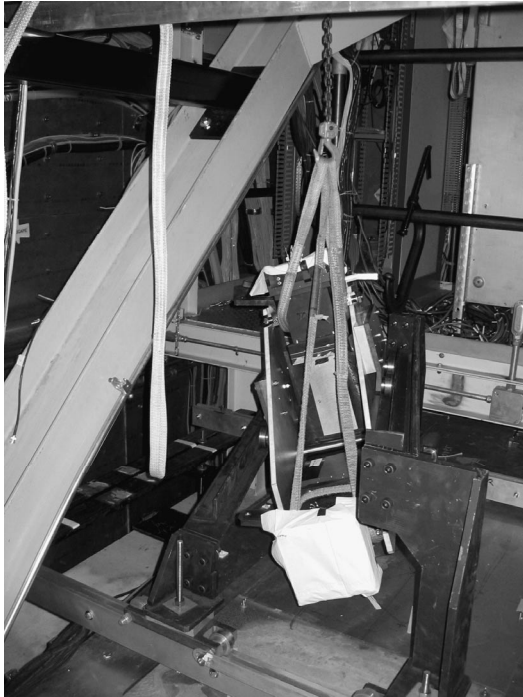
7/ Remove the horizontal stabilization rods.

8/ Lower the detector by loosening the vertical rods (4 to 5 turns) until it stands on the rails.

9/ Remove the vertical rods and the aluminium transverse girders on top of the detector.

10/ Remove the second PMT and protect the PMT window and detector as in 1/.

11/ Install the slings and hoists to hold the detector. At this stage the detector should look like:



12/ Tighten the slings while bringing the detector upstream along the rails. Make sure the horizontal spacers are well

tightened to the carts so that the rails don't split apart when moving the detector.

13/ Pull the detector + rails setup on one side of the acceptance (left side in right arm, right side in left arm).

14/ Use extra hoists on the sides of the detector package to bring the detector on the platform inside the hut.

15/ Use rubber mattress and cart to move the detector toward the outside spectrometer platform.

16/ Use a hoist to bring the detector down on the HRS platform.

17/ Bring the detector on the hall A floor with the crane. Remove the side plates.

18/ Remove rails and HAPPEX frame.

19/ Bring detectors back on the shelves of the EEL building clean room.

20/ Bring all mechanics in storage building.

