Scintillation Screen IP Vacuum Considerations

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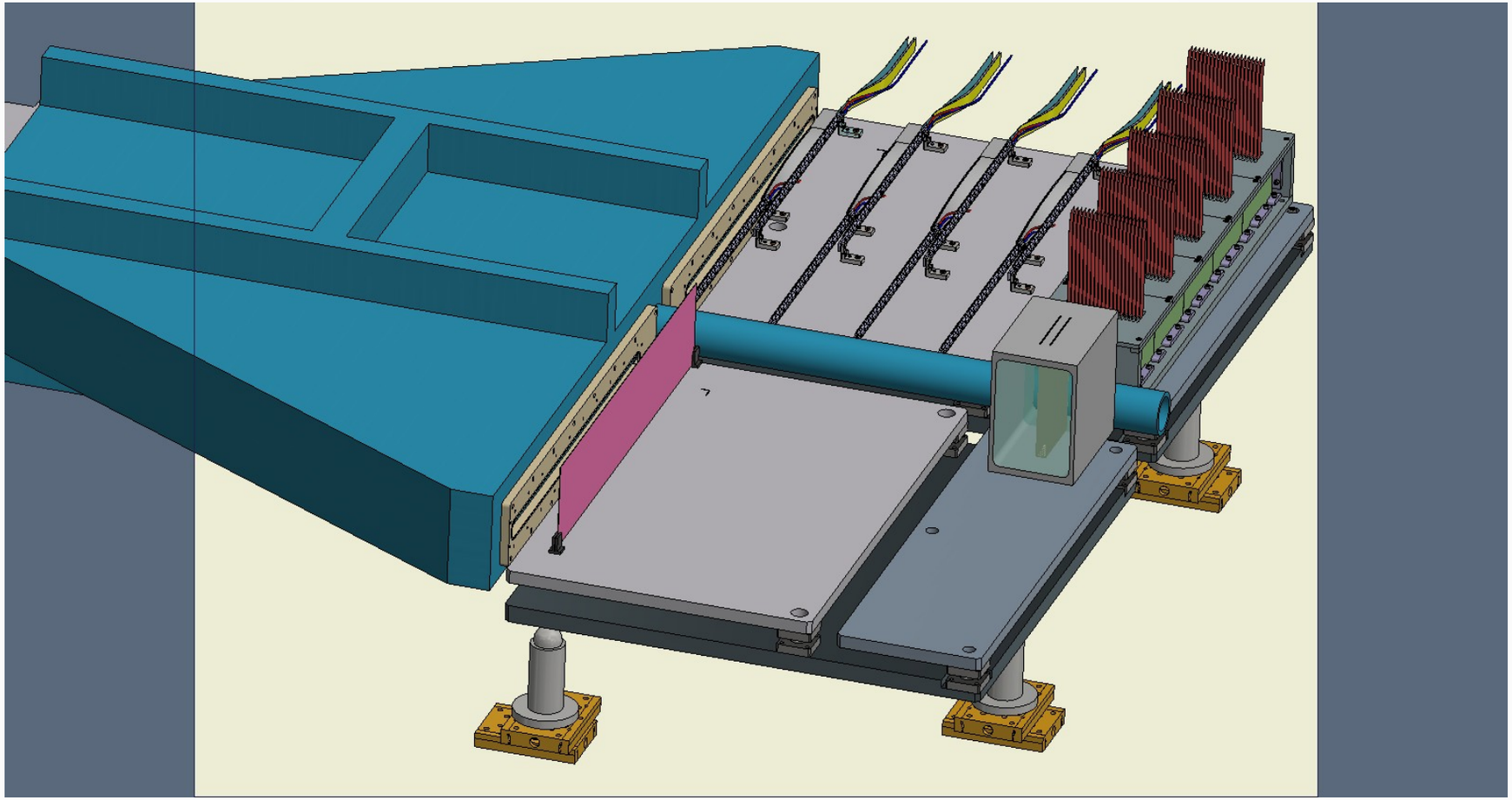
LUXE

DESY.

IP Scint Screen Considerations



- Proposed elongation of vacuum chamber, pushing electron detectors further back in z, is very welcome
- Better potential energy resolution for fixed position resolution
- The screen is easy/cheap to extend in x direction to recover low energy acceptance (but still limited by magnet/vaccum chamber)

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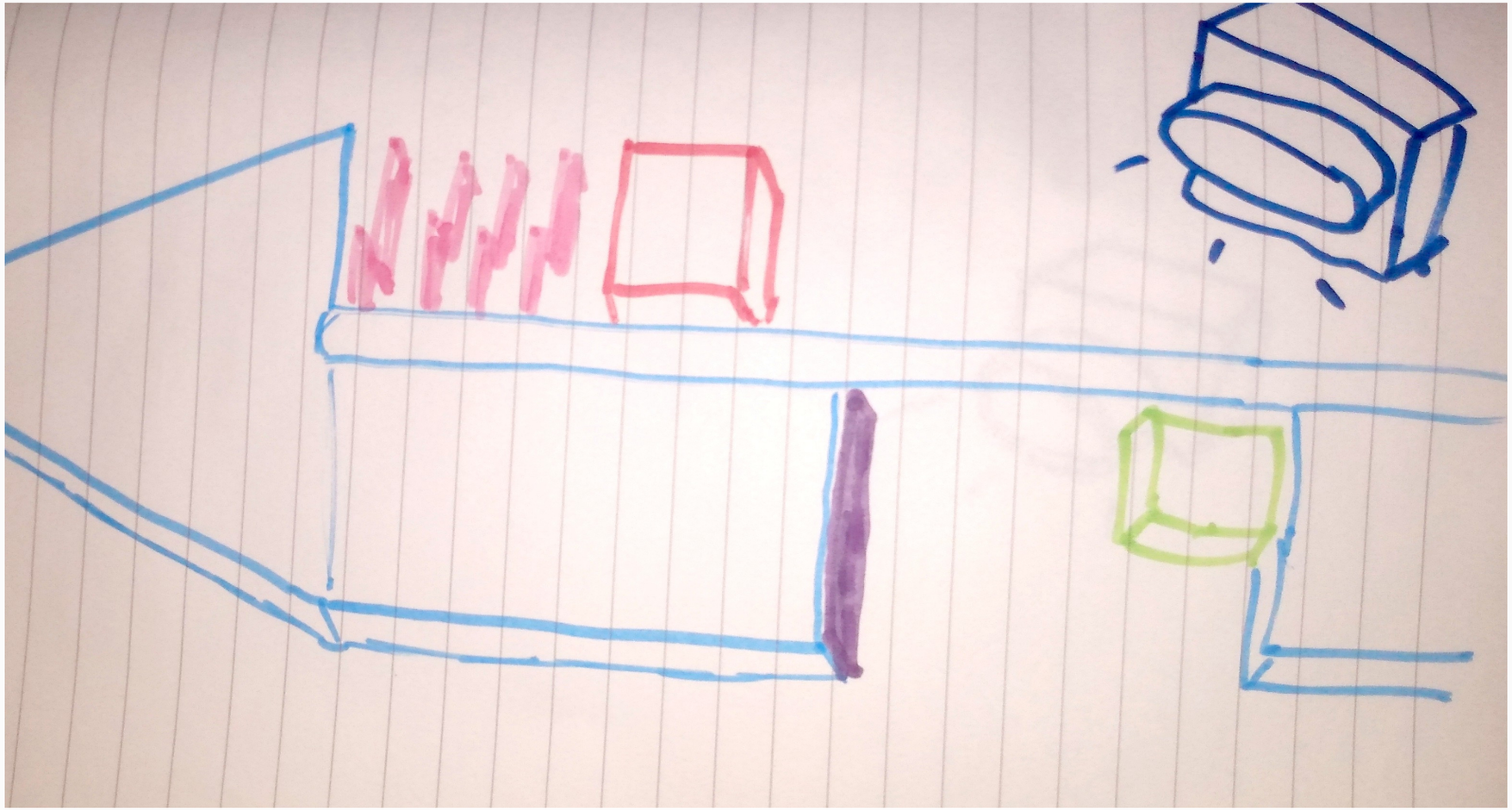
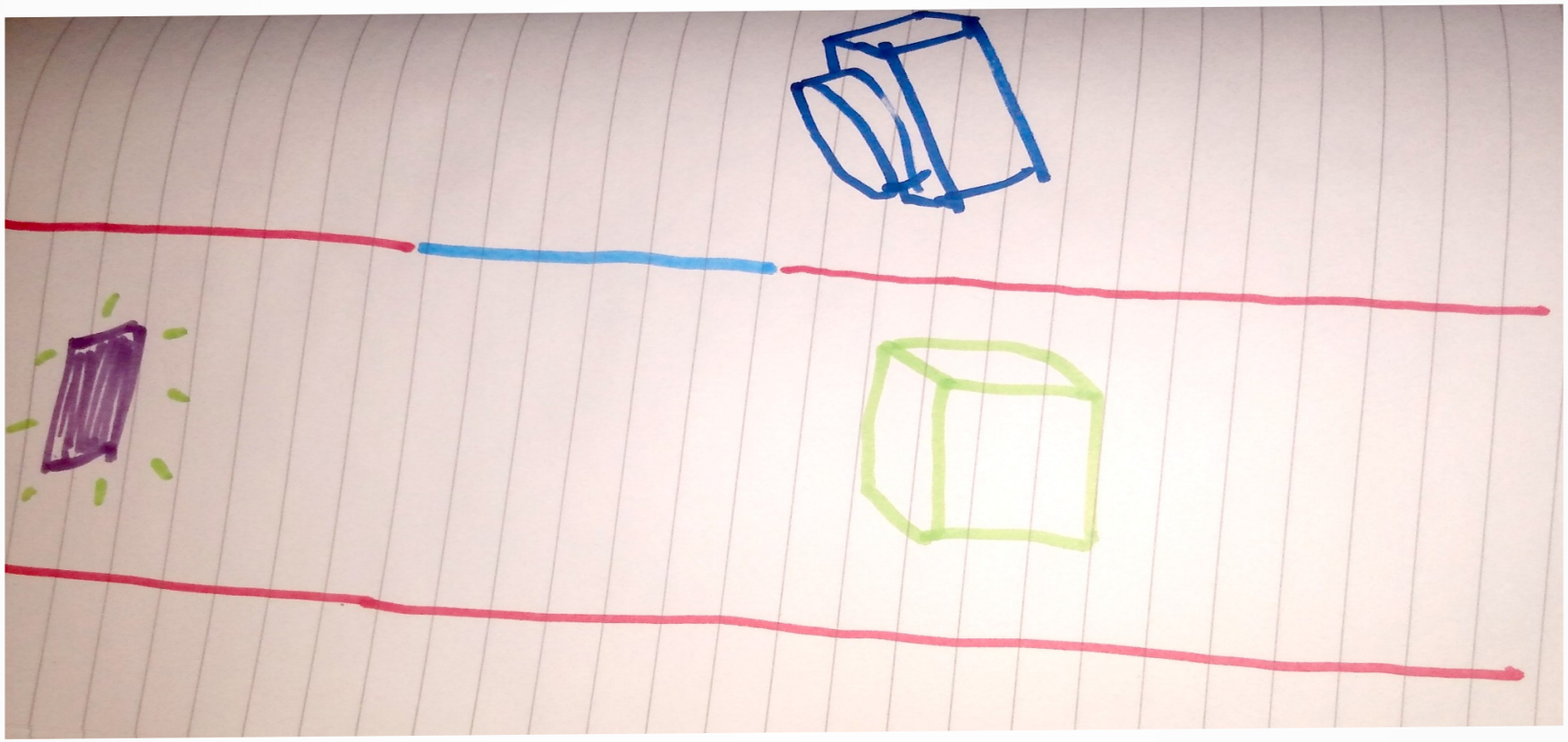


- Better potential energy resolution for fixed position resolution
- The screen is easy/cheap to extend in x direction to recover low energy acceptance (but still limited by magnet/vaccum chamber)
- need space for camera to resolve screen at good angle, at least 20 cm of Air in previous designs shown

IP Scint Screen Considerations

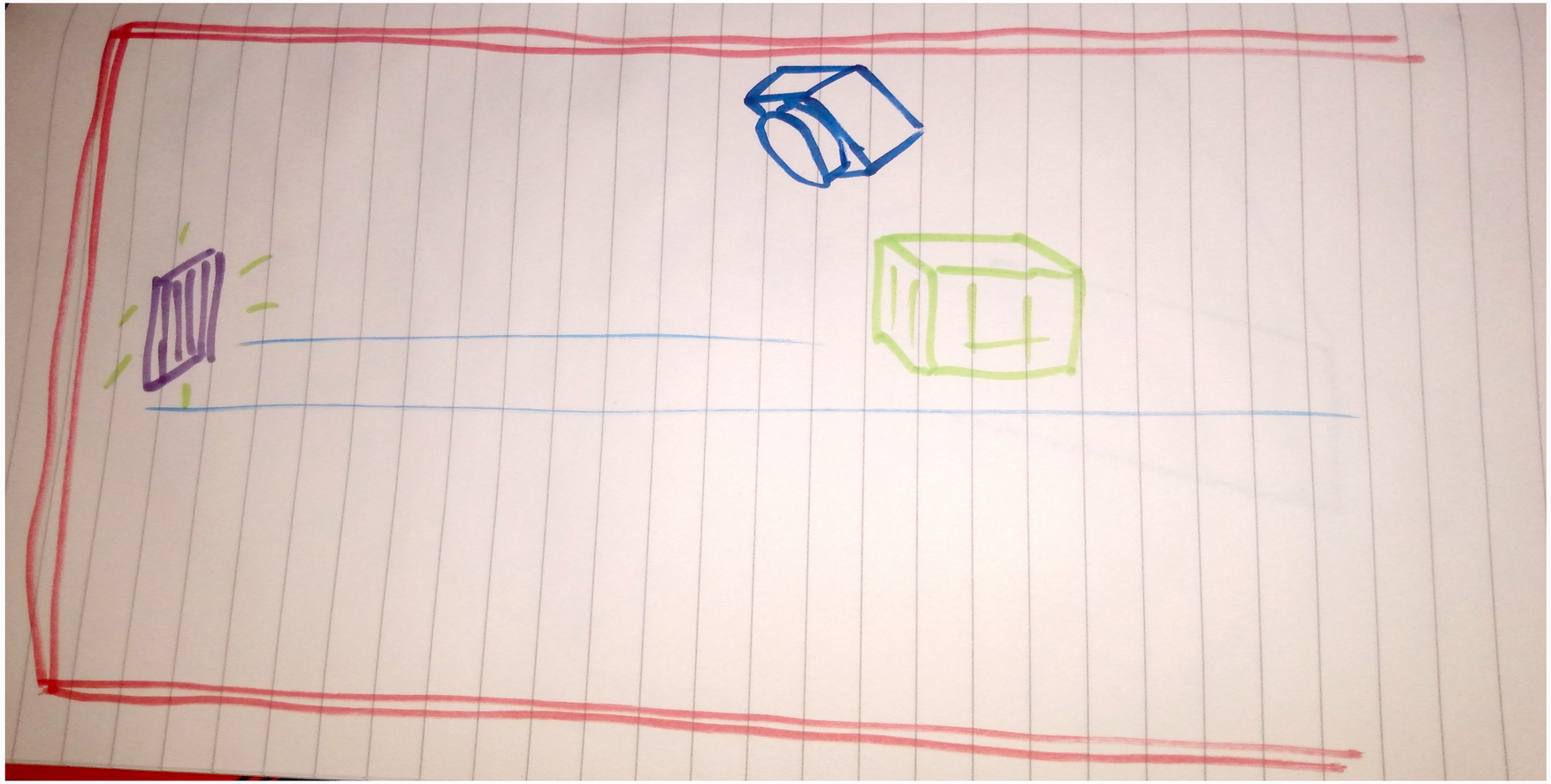


- Optical image through transparent window & at a oblique angle to screen is problematic

- Would have to be thick too, to mechanically preserve vacuum

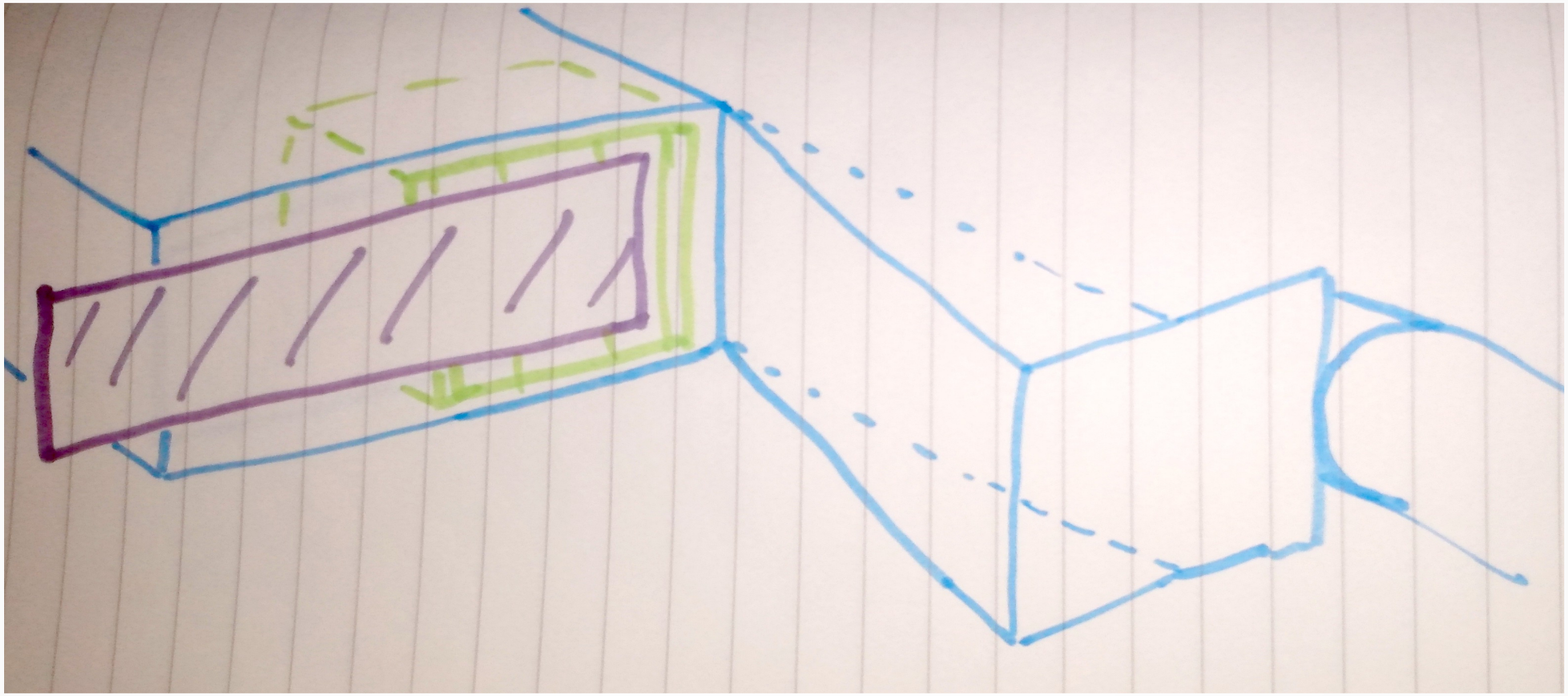
-Area would be large too, to cover entire screen, roughly 50 cm * 25 cm

IP Scint Screen Considerations – Camera inside Chamber



- Alternatively if the size of the chamber is not a problem, we may place the cameras inside
- An advantage is no more optical aberration and the chamber is automatically perfectly dark
- Of course still carries natural complication with reduced access to detectors

IP Scint Screen Considerations – Screen behind Cherenkov



- Could have Screen behind Cherenkov, not envisioned to be a problem
-No limit then on space behind to fit cameras
- Could then have e-beam miss the screen and be contained within vacuum flange
- Still, scattered electrons will pass through screen + air & there can be significant scattering with chamber walls