

Next steps for the Compton Polarimeter Design

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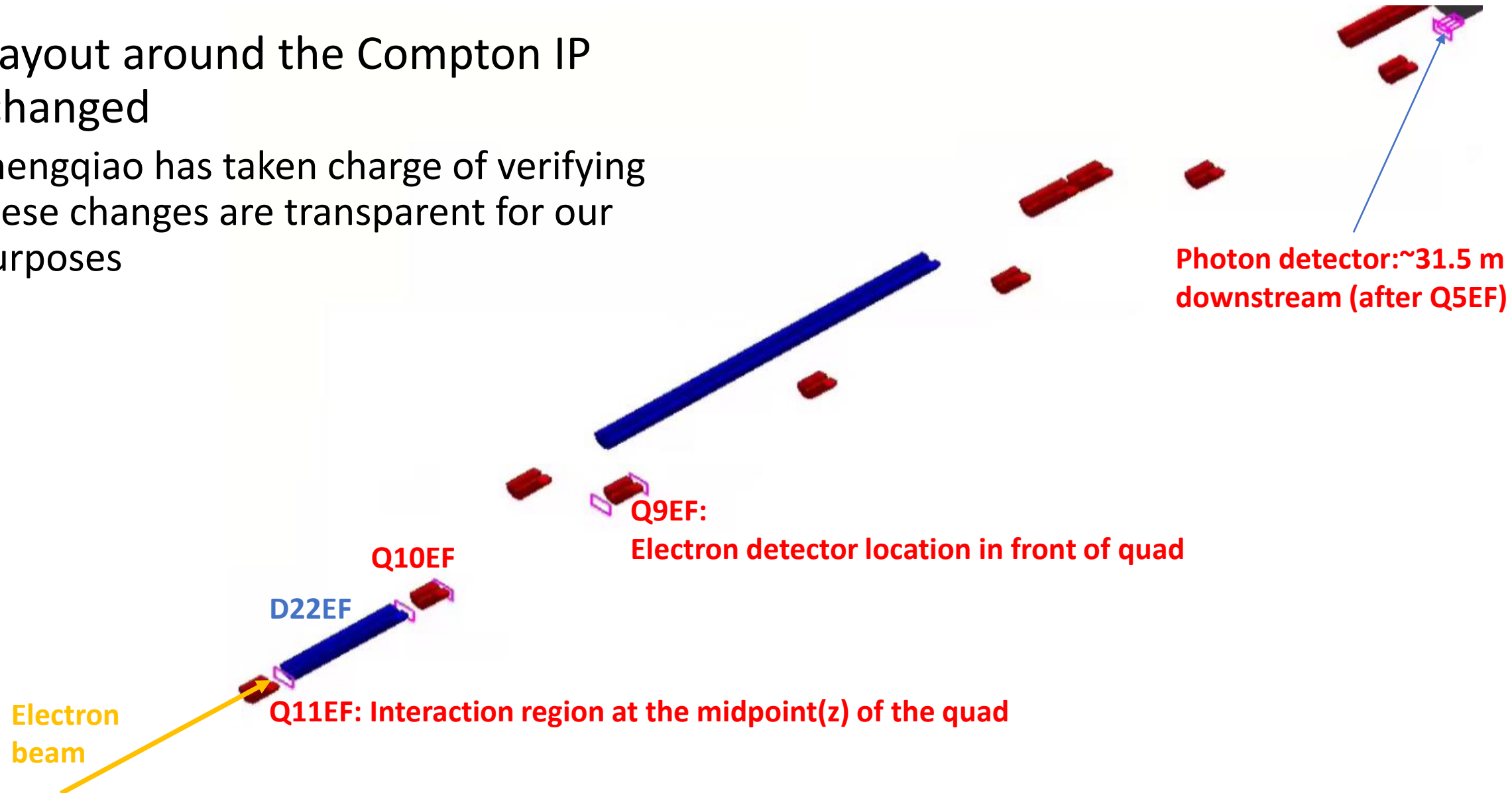
**Center for Frontiers
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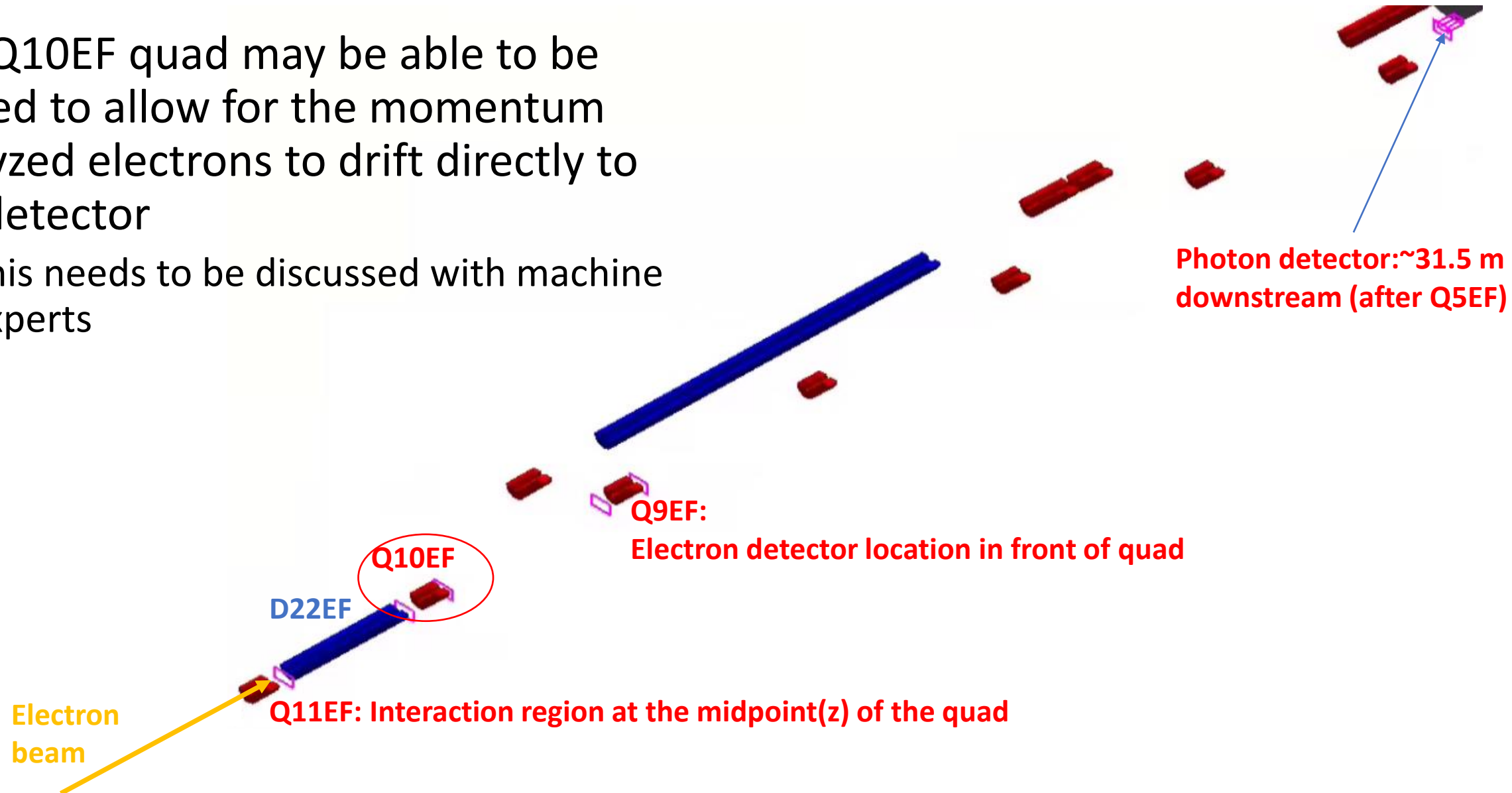
Magnet layout changes

- The layout around the Compton IP has changed
 - Zhengqiao has taken charge of verifying these changes are transparent for our purposes



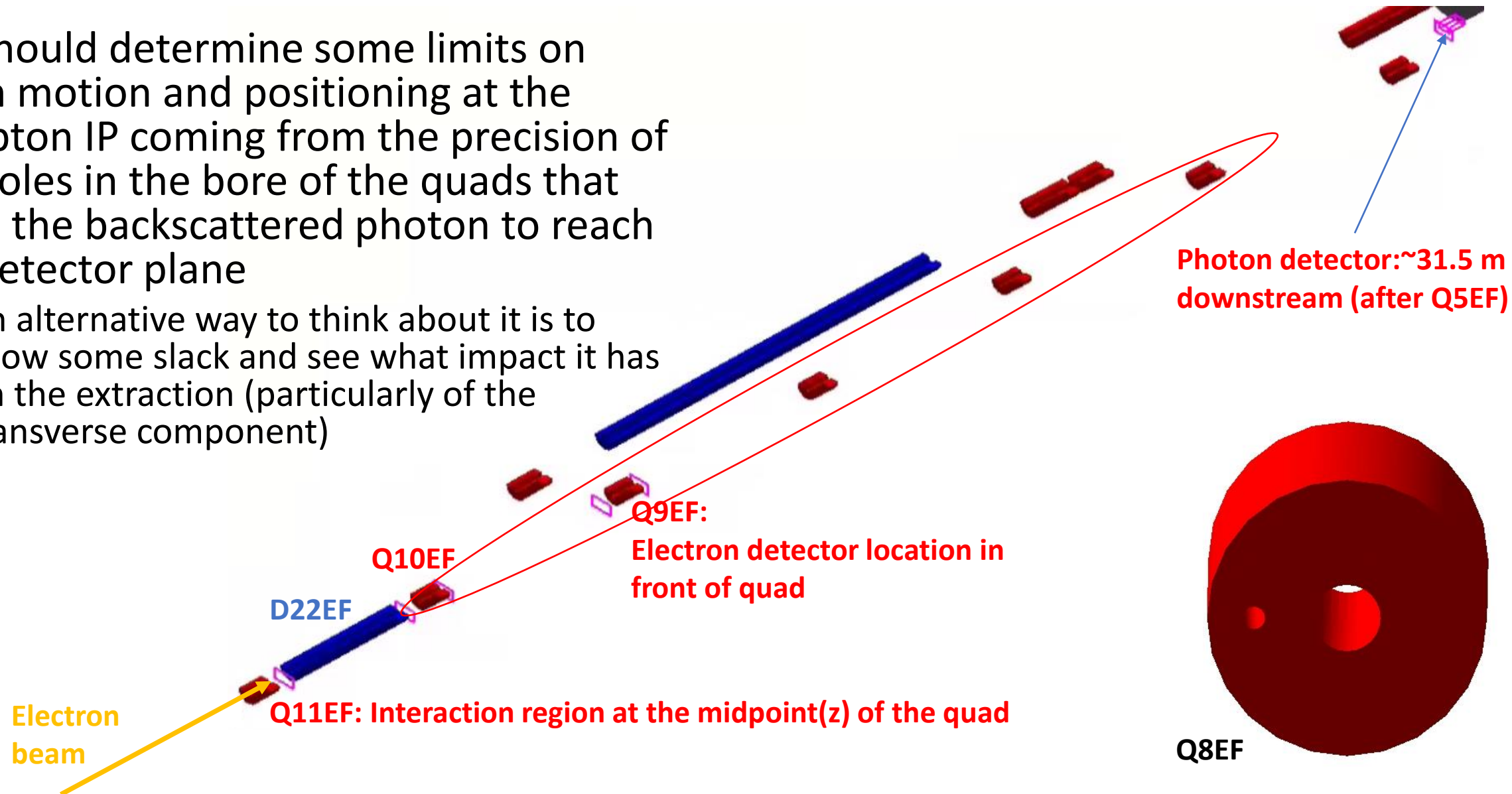
Magnet layout changes

- The Q10EF quad may be able to be moved to allow for the momentum analyzed electrons to drift directly to the detector
 - This needs to be discussed with machine experts



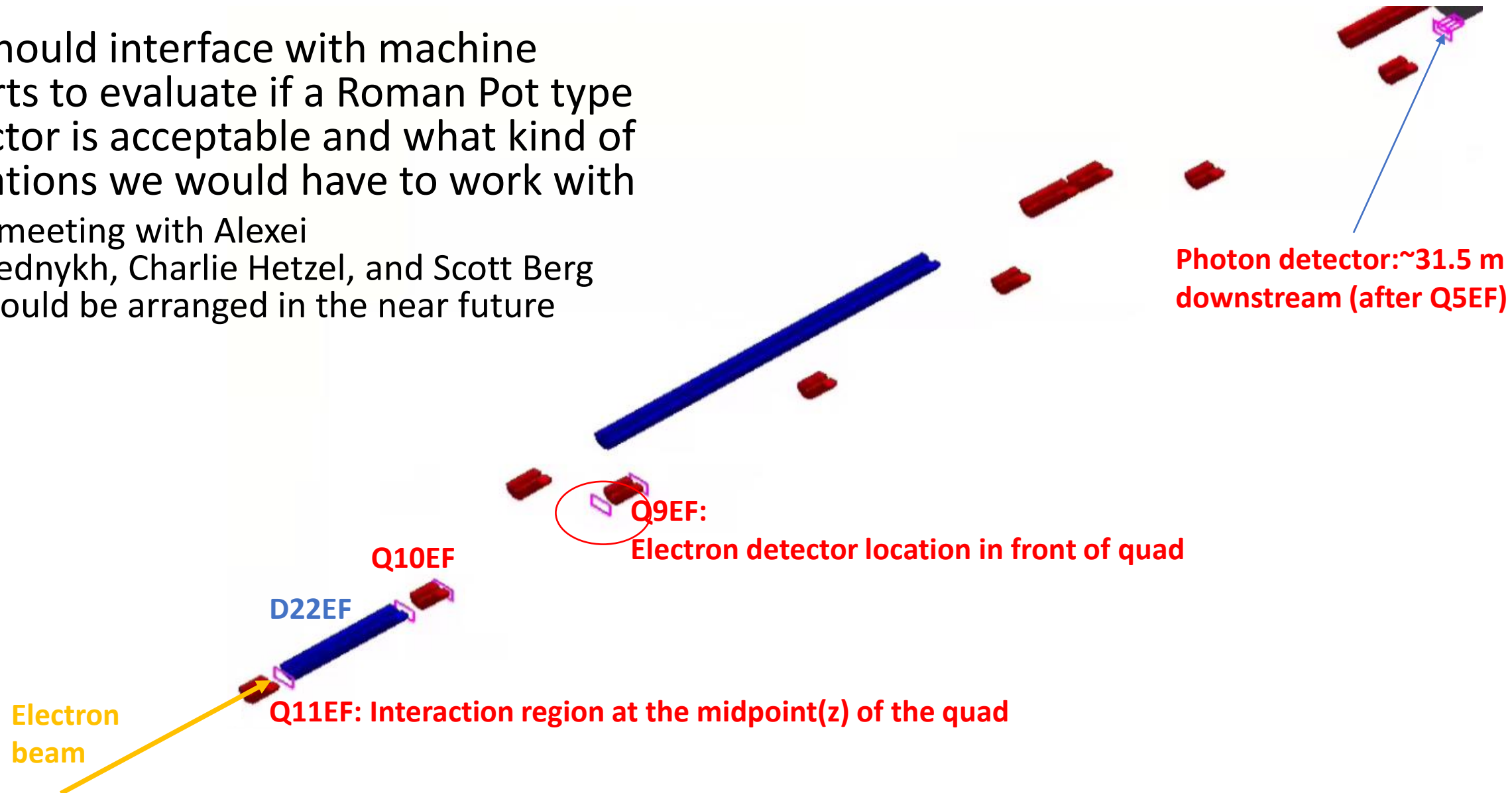
Photon path through quads

- We should determine some limits on beam motion and positioning at the Compton IP coming from the precision of the holes in the bore of the quads that allow the backscattered photon to reach the detector plane
 - An alternative way to think about it is to allow some slack and see what impact it has on the extraction (particularly of the transverse component)



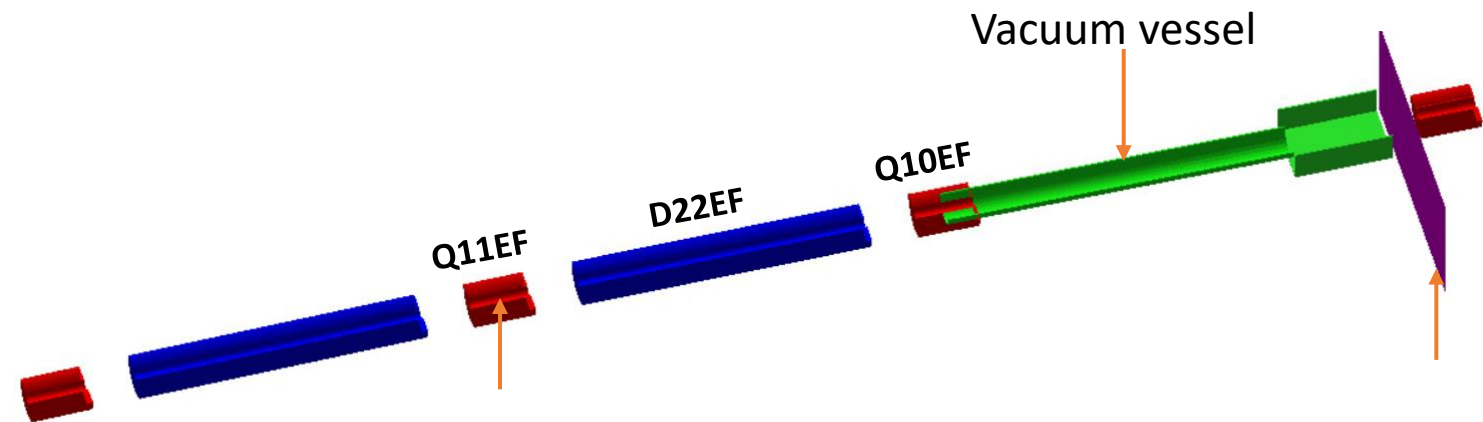
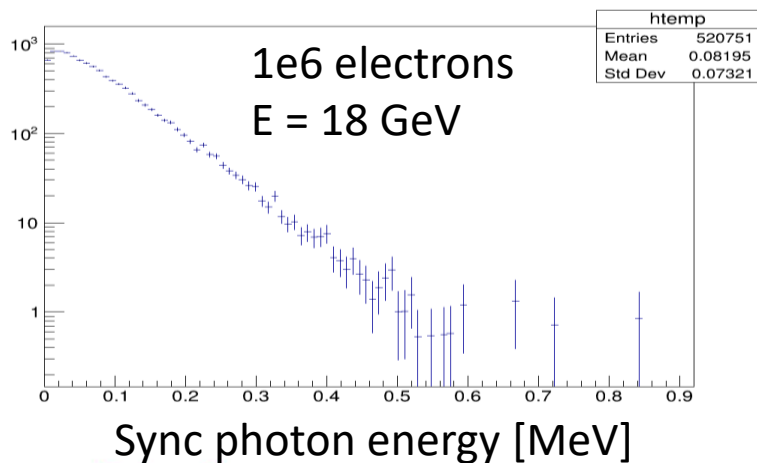
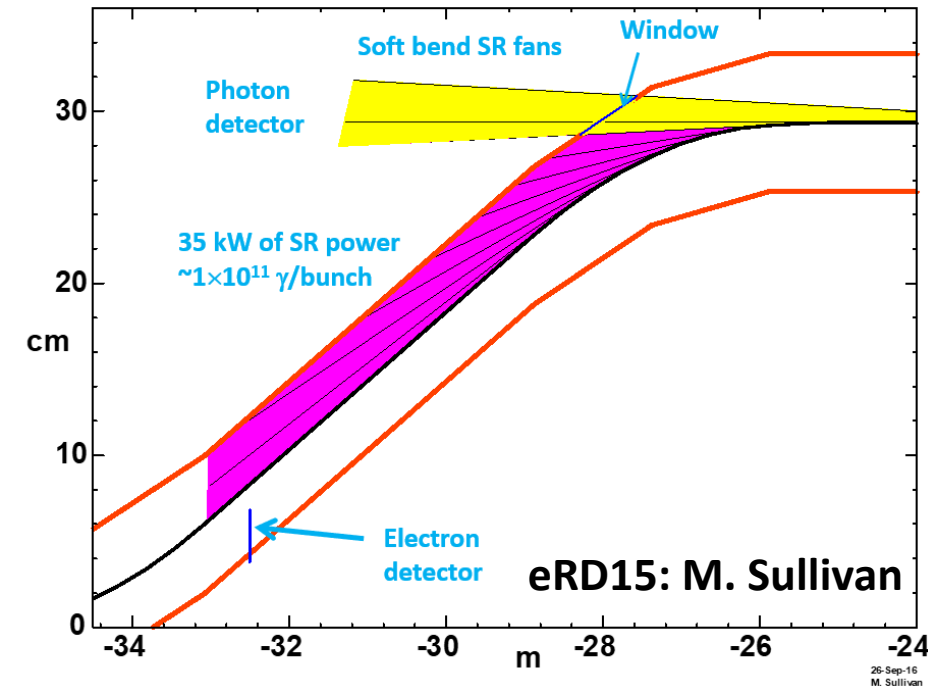
Electron detector enclosure

- We should interface with machine experts to evaluate if a Roman Pot type detector is acceptable and what kind of limitations we would have to work with
 - A meeting with Alexei Blednykh, Charlie Hetzel, and Scott Berg should be arranged in the near future



Synchrotron studies

- From past studies we expect both the electron and photon detectors to need some way to deal with the generated sync light from the dipole
 - For the e-det the worry is related to reflection from the beampipe
 - The photon detector is sitting right in the path of the sync spray
- A realistic model of the beampipe would be the next crucial step
- At the same time we should x-check the sync light implementation in G4 as well as the possibility of interfacing with SYNRAD



**Caryn Palatchi

Other thoughts

- A good milestone will be the technical review in early 2022 at which point we should be somewhere close to 35% completed design
- Evaluate potential for brem backgrounds
- Additional equipment required to calibrate or operate the detectors
- Full detector responses for both photon and electron detectors
- Full analysis chain to confirm systematic goals are achievable

Backup