

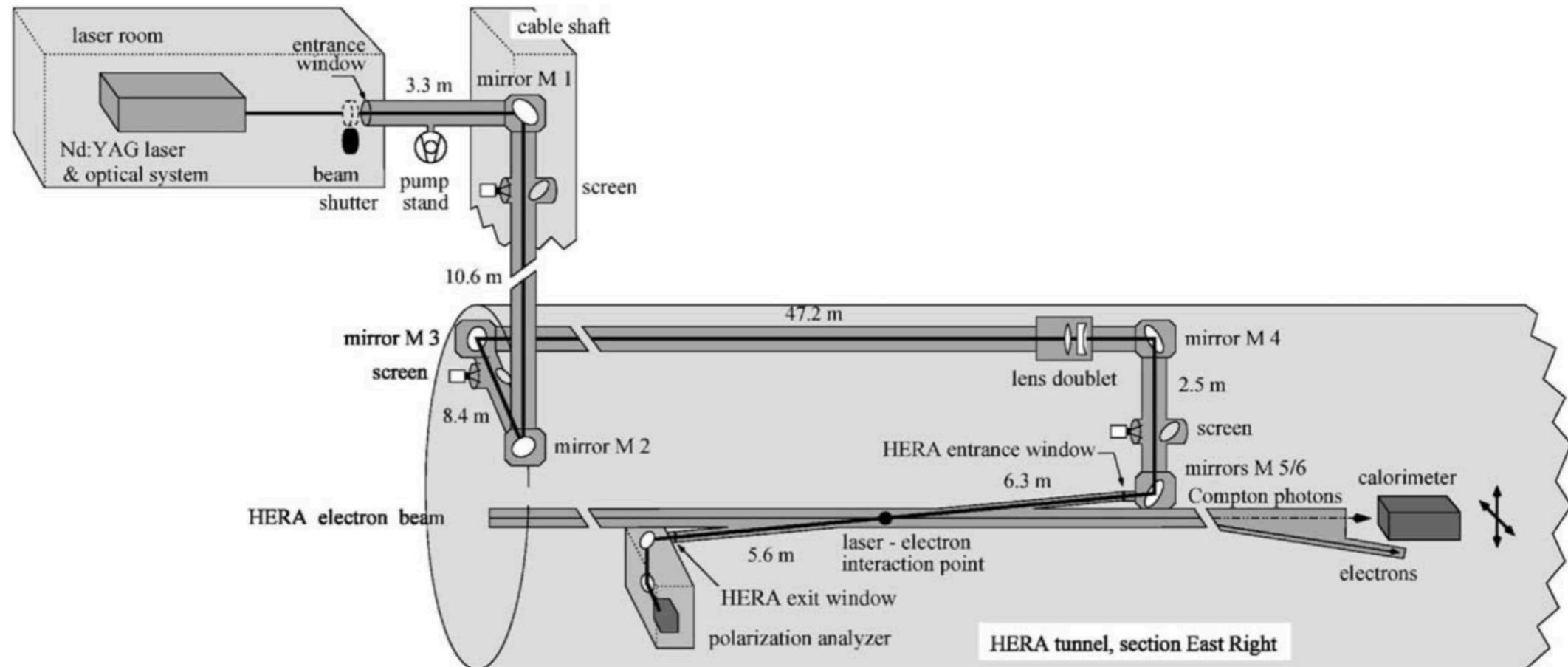
Electron Polarimeter

Zhengqiao Zhang



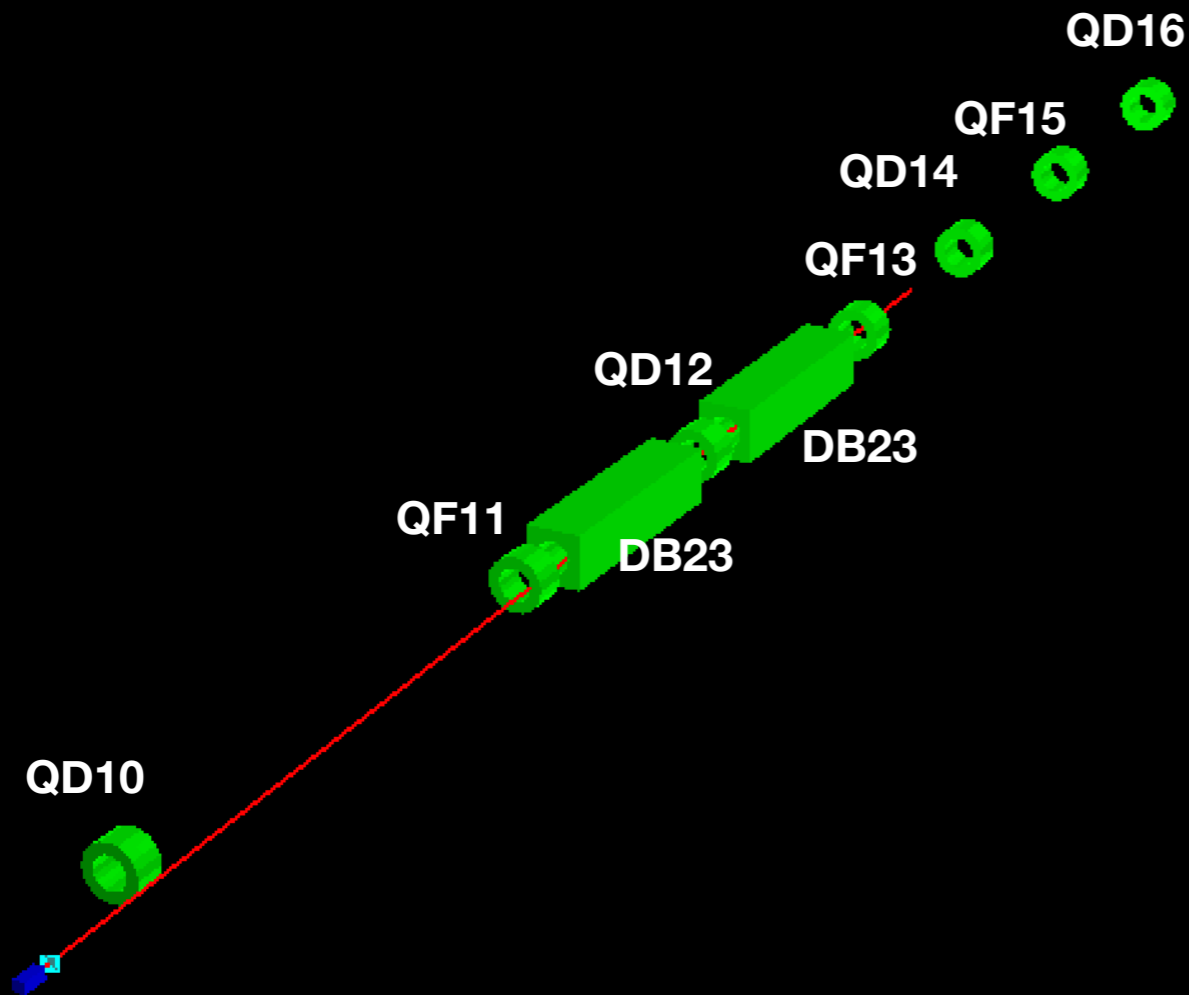
Electron polarimeter in HERA

Layout of the Longitudinal Polarimeter in the HERA East section.

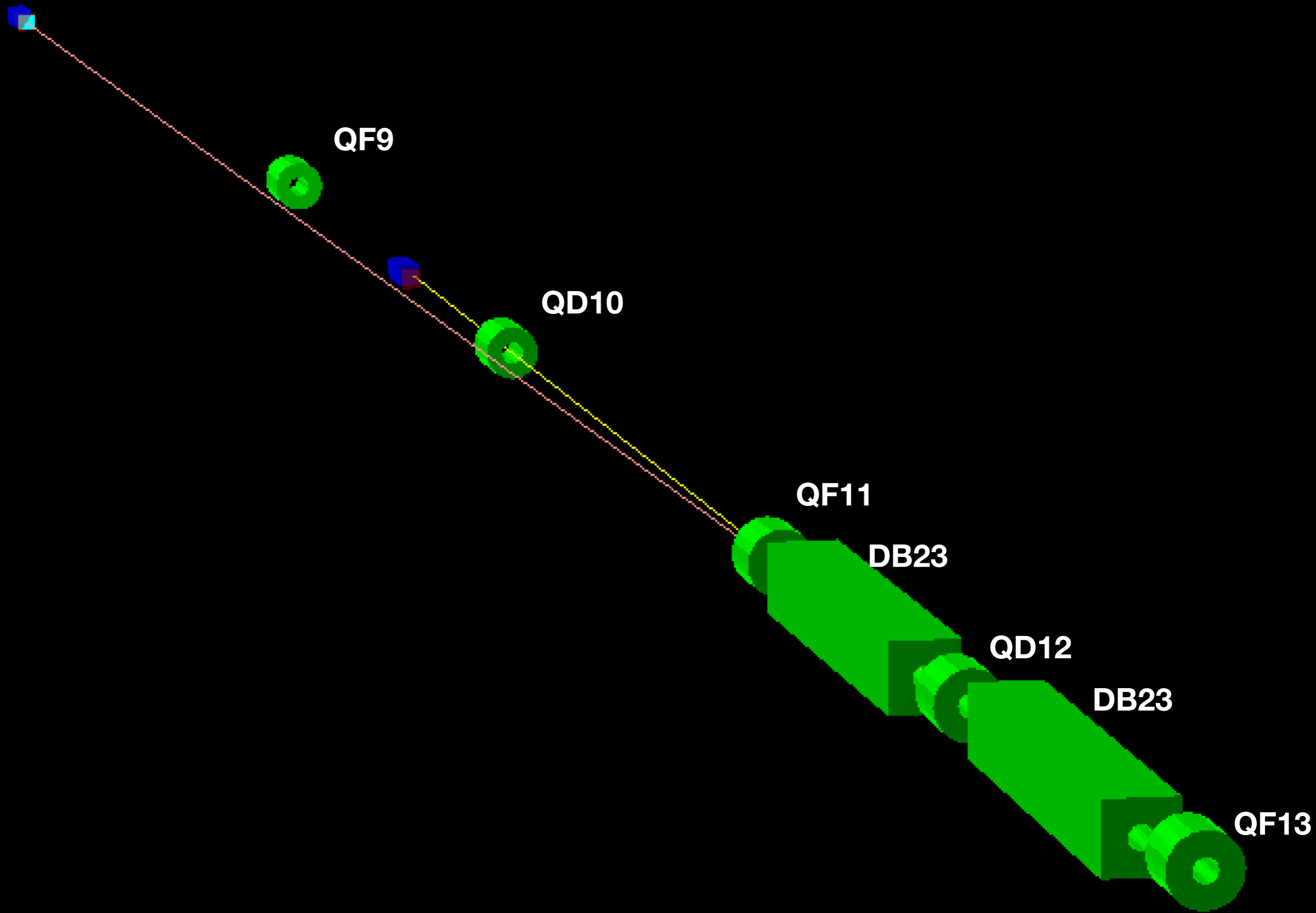


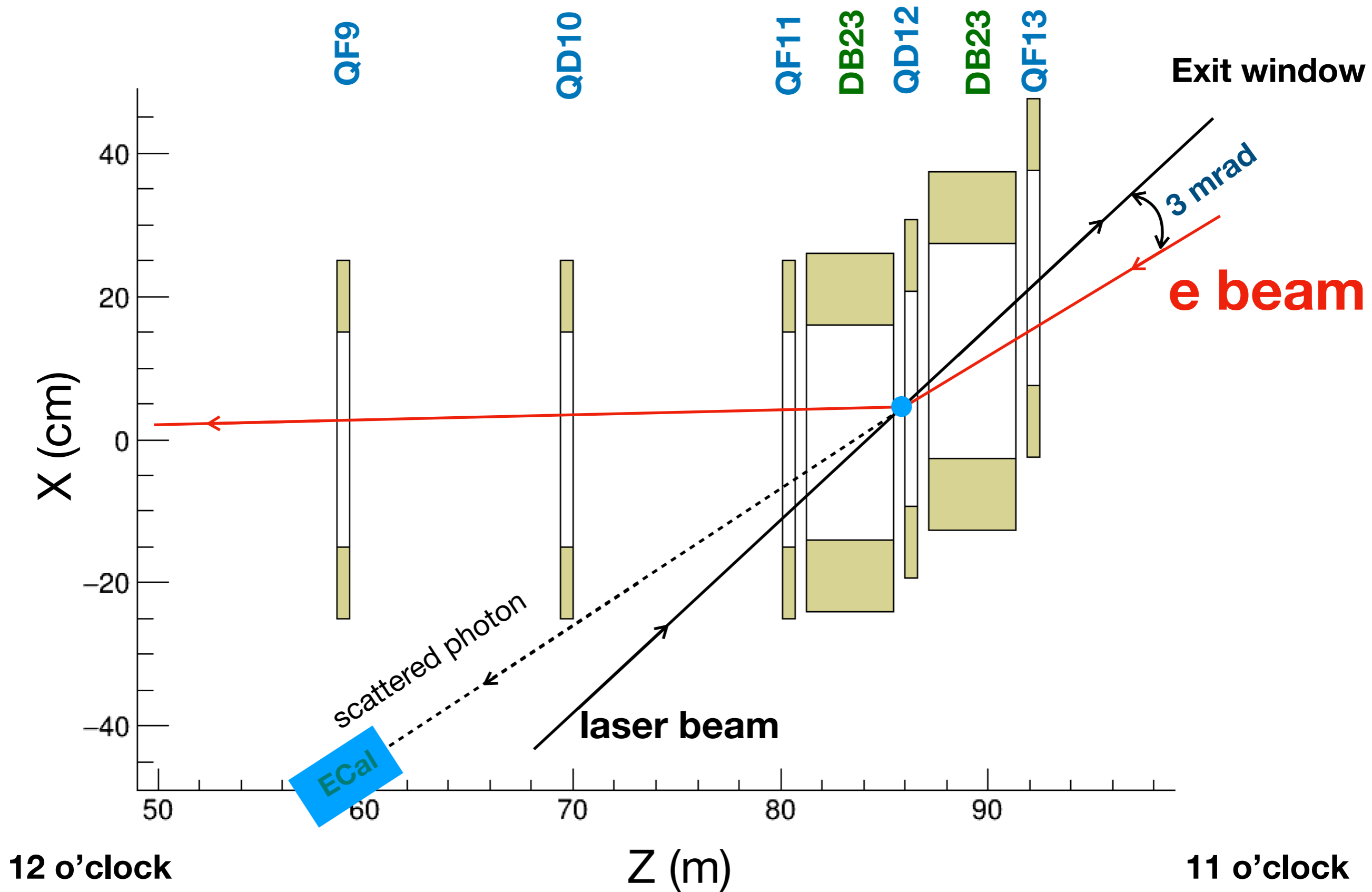
Beckmann M, Borissov A, Brauksiepe S, et al. The longitudinal polarimeter at HERA[J]. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2002, 479(2-3): 334-348.

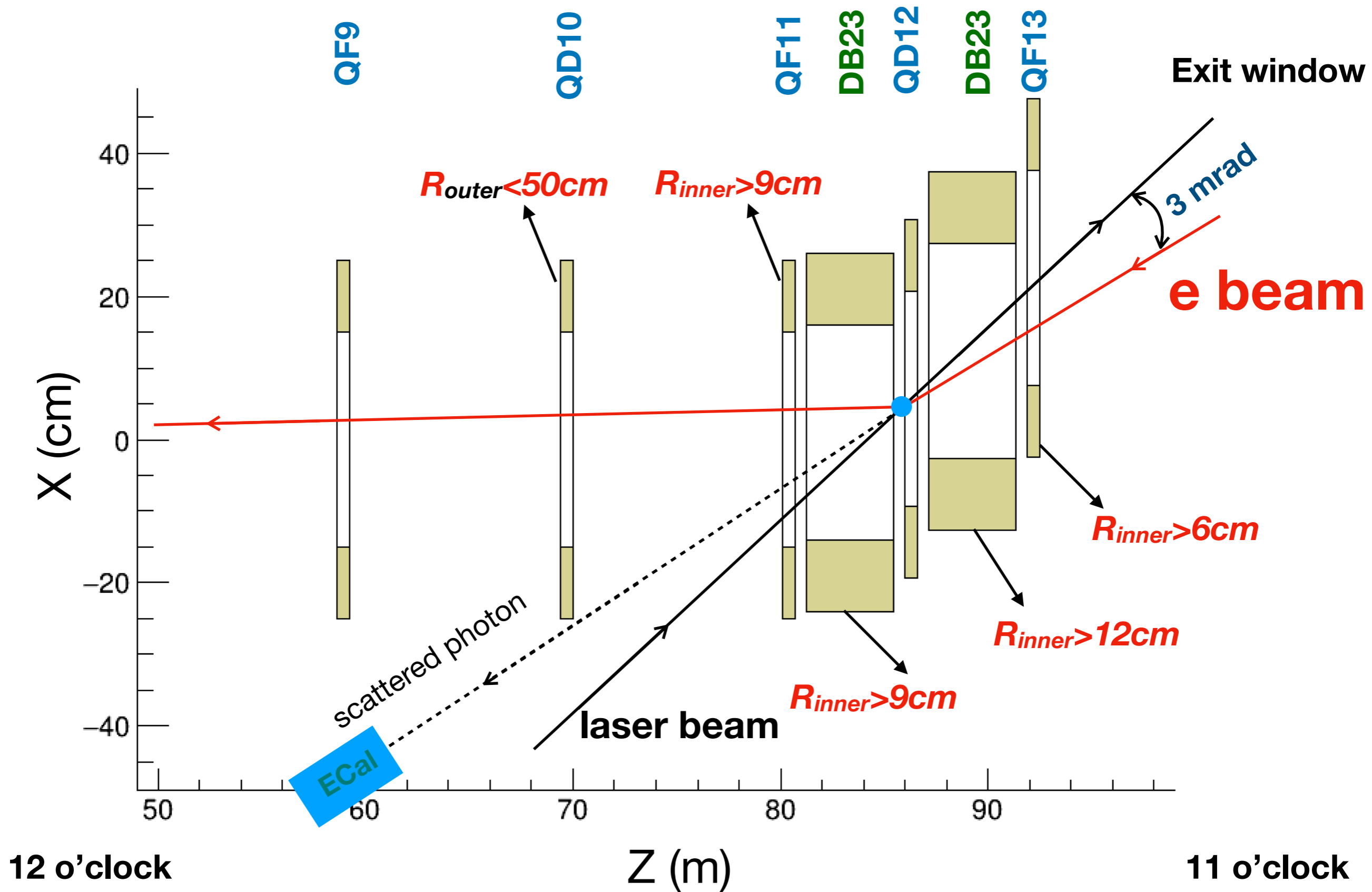
IR12 layout



- The detector is located at $\sim 30\text{m}$ away from the interaction point of laser;
- The center of the detector is about 0.99 meter off the beam line;
- The width and height of the detector is 20 cm;
- For now, we don't have the exact information for the aperture. The inner radius of the magnets in this simulation is 30cm. **The photons can't pass through if the inner radius is too small;**
- We use 18 GeV longitudinal polarized electron beam for our simulation;



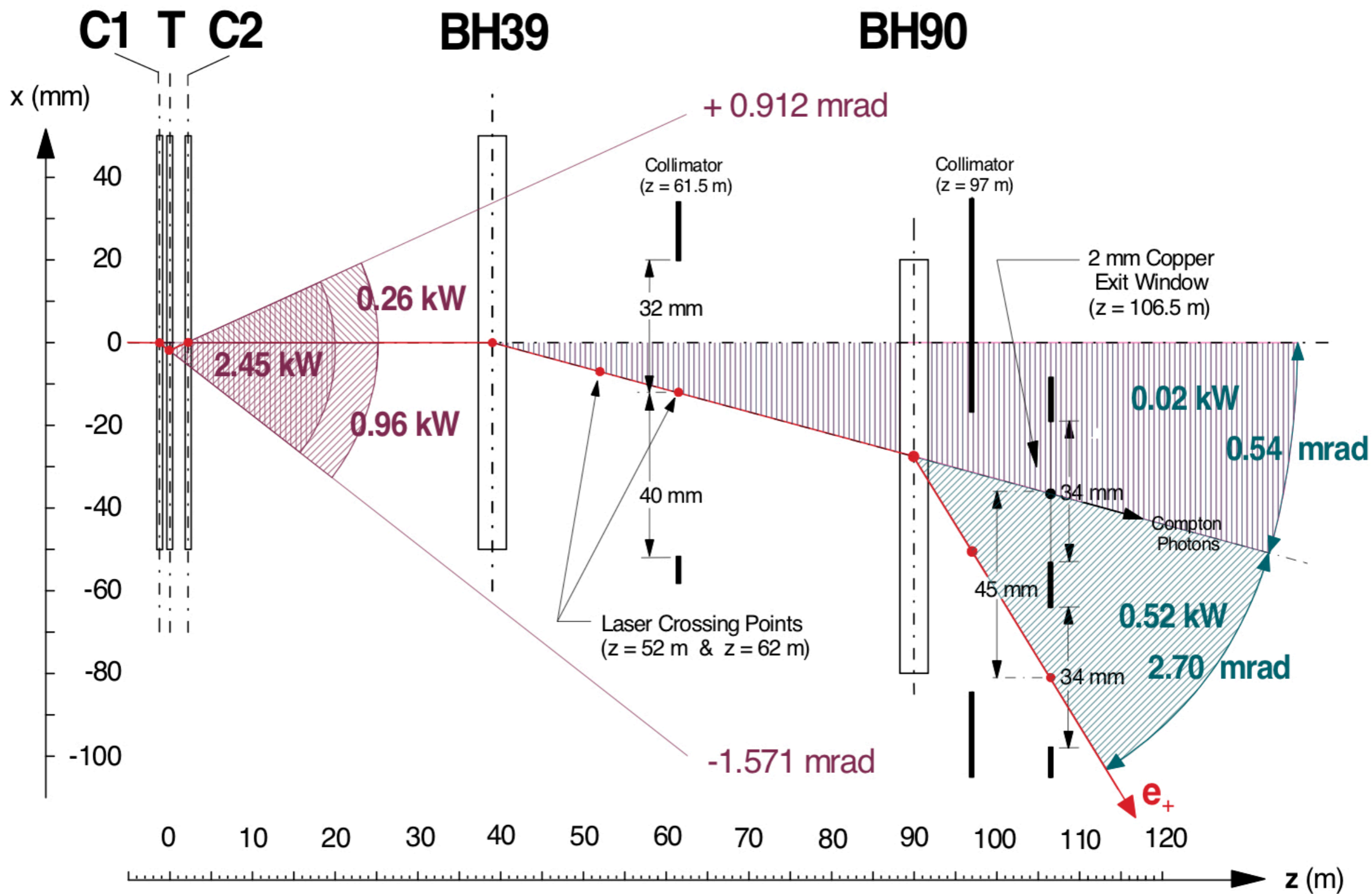




NEXT:

- Simulate the recoil electron detection;
- More details on the pre-shower and ECal;
- Background study, like synchrotron radiation, synchrotron radiation that bouncing off the inner surface of the beam pipe and so on;
- Moller polarimeter in RCS;

Backup



LPOL Beamline Configuration and Synchrotron Radiation with Transverse Target Magnet (at 27.5 GeV and 30 mA)

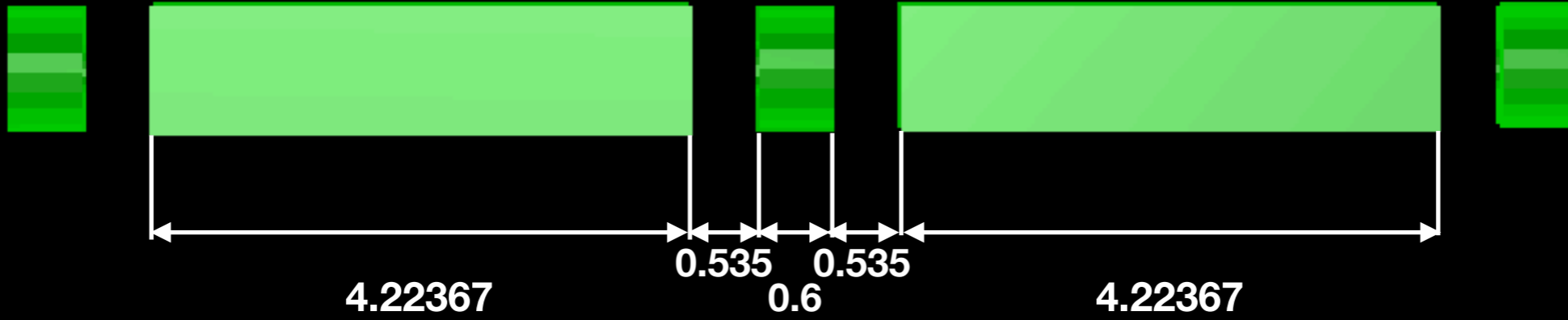
QF11

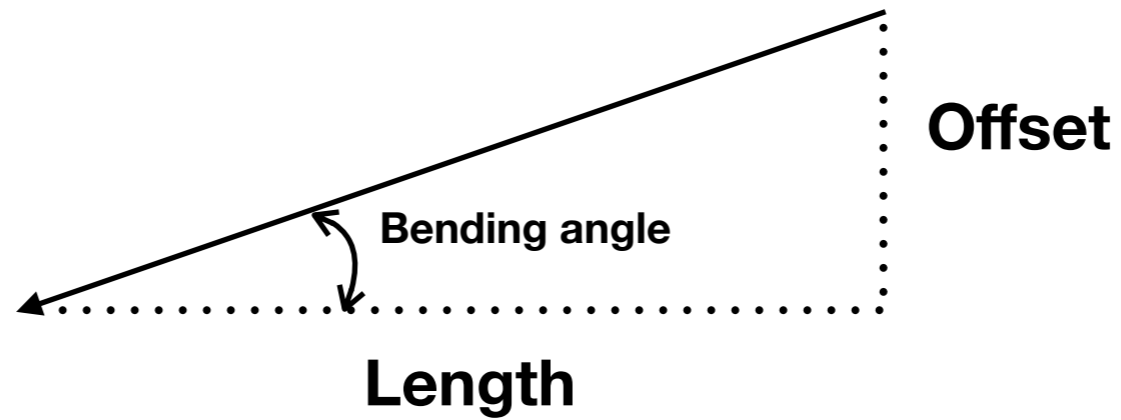
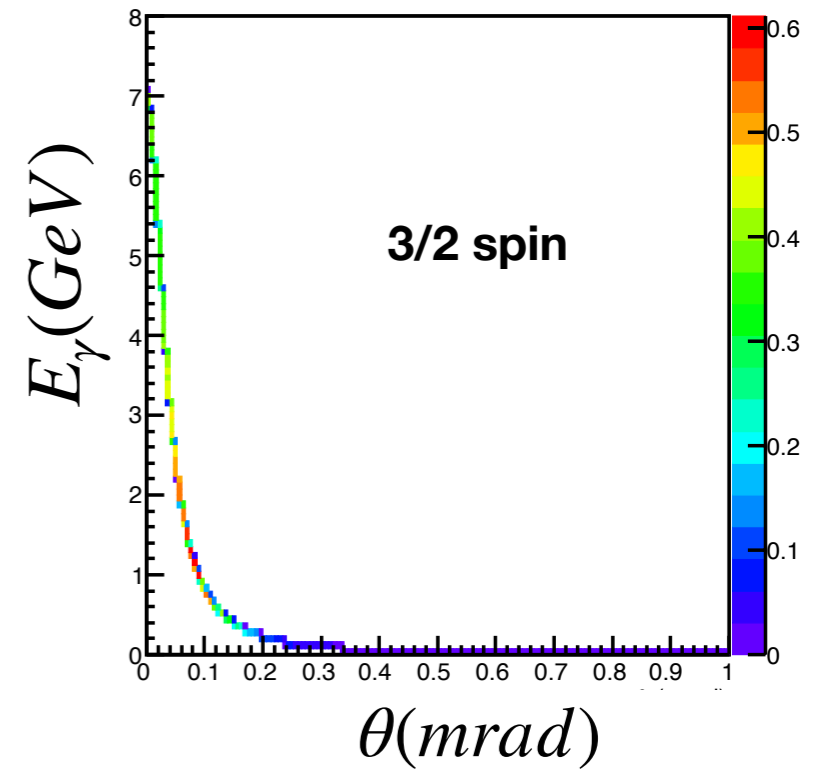
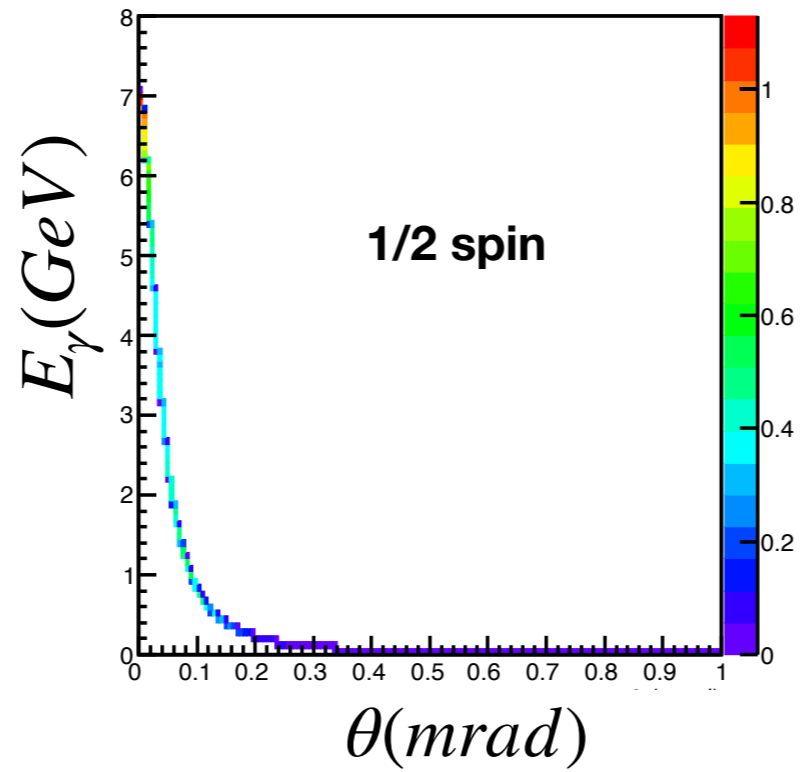
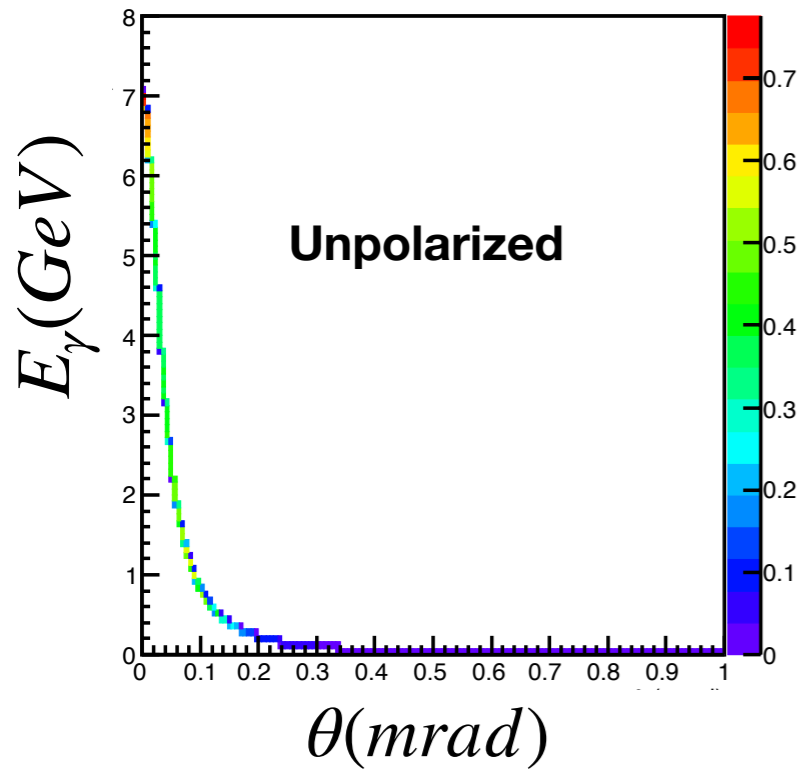
DB23

QD12

DB23

QF13





HERA: $3.0 \cdot \tan(2.7 \cdot 0.001) \cdot 100 = 0.8\text{cm}$

EIC: $12.3 \cdot \tan(36 \cdot 0.001) \cdot 100 = 44\text{cm}$

