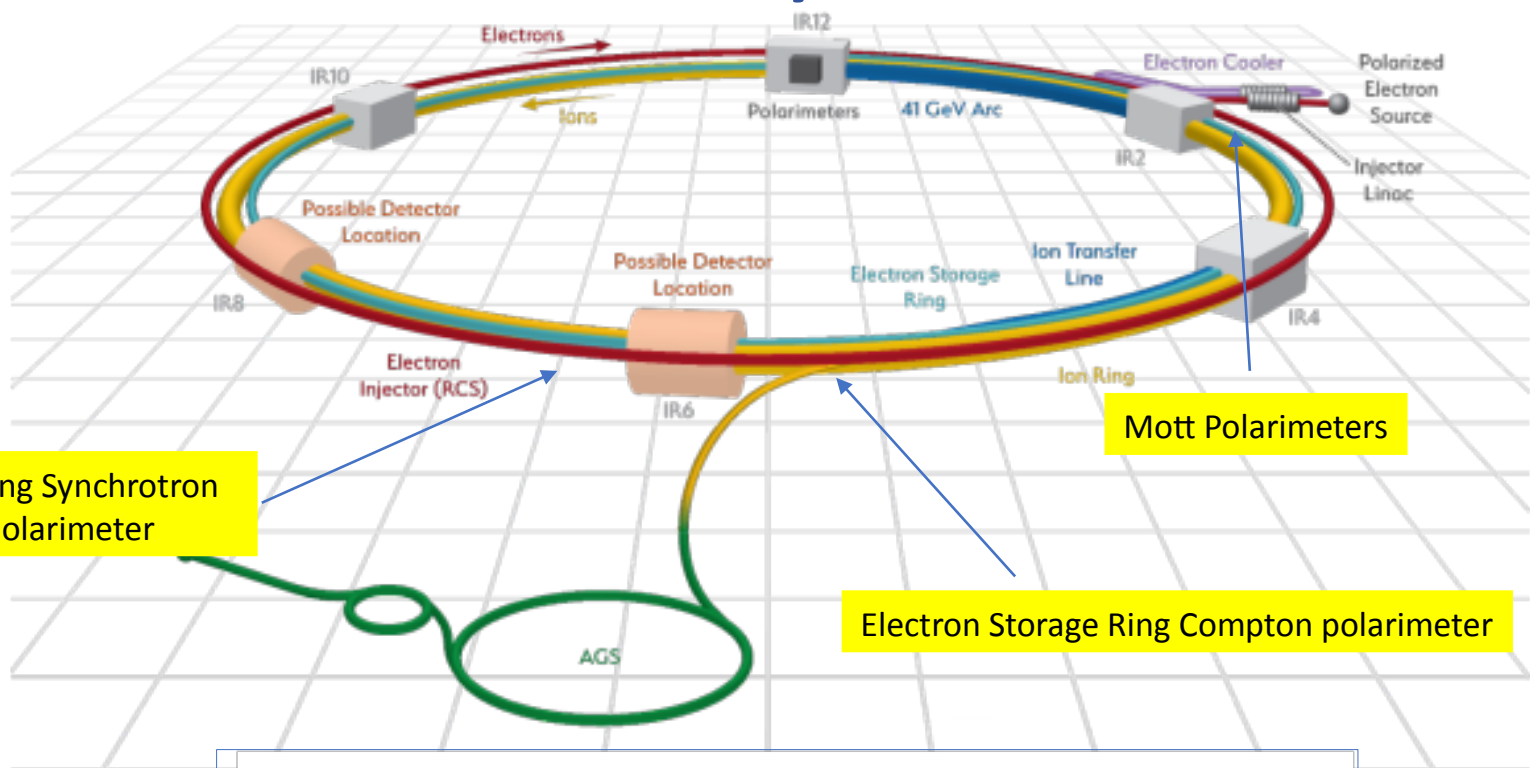


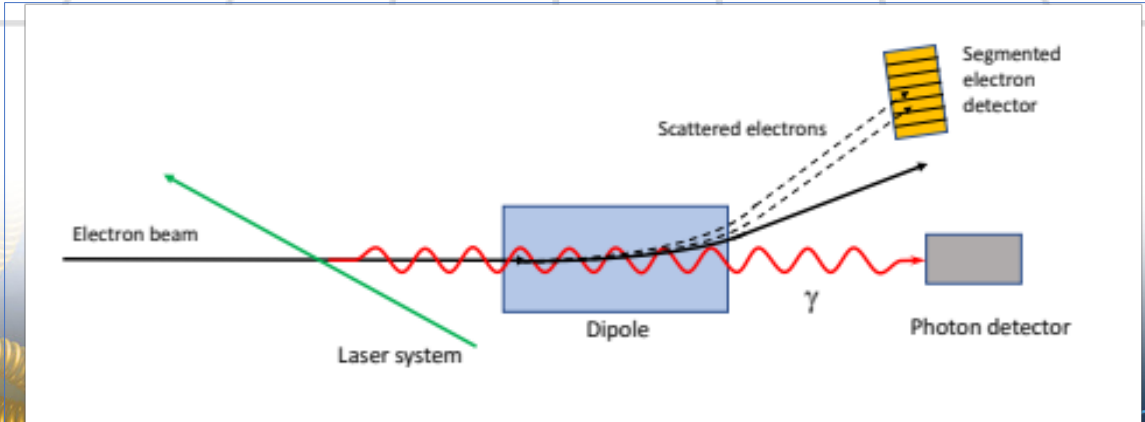
Electron Polarimetry



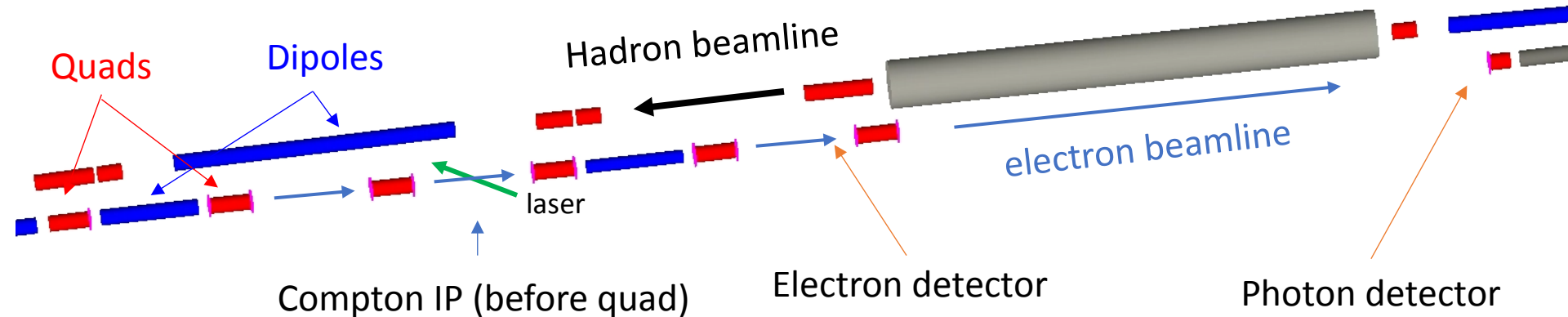
Rapid Cycling Synchrotron Compton polarimeter

Mott Polarimeters

Electron Storage Ring Compton polarimeter



ESR Compton Polarimeter



ESR Compton will be upstream of detector IP

Key components:

- Laser system → single-shot laser, pulsed at bunch frequency (25 or 100 MHz)
- Position sensitive electron detector → placed after dipole and horizontally defocusing quad (diamond strip detector)
- Photon detector → calorimeter (tungsten powder, looking into PbWO₄ or BaF₂) + position sensitive detector (diamond strip)

Polarization components at ESR Compton

At Compton interaction point, electrons have both longitudinal and transverse (horizontal) components

- Longitudinal polarization measured via asymmetry as a function of backscattered photon/scattered electron energy
- Transverse polarization from left-right asymmetry

Beam polarization will be fully longitudinal at detector IP, but accurate measurement of absolute polarization will require *simultaneous* measurement of P_L and P_T at Compton polarimeter

Beam energy	P_L	P_T
5 GeV	96.5%	26.1%
10 GeV	86.4%	50.4%
18 GeV	58.1%	81.4%

