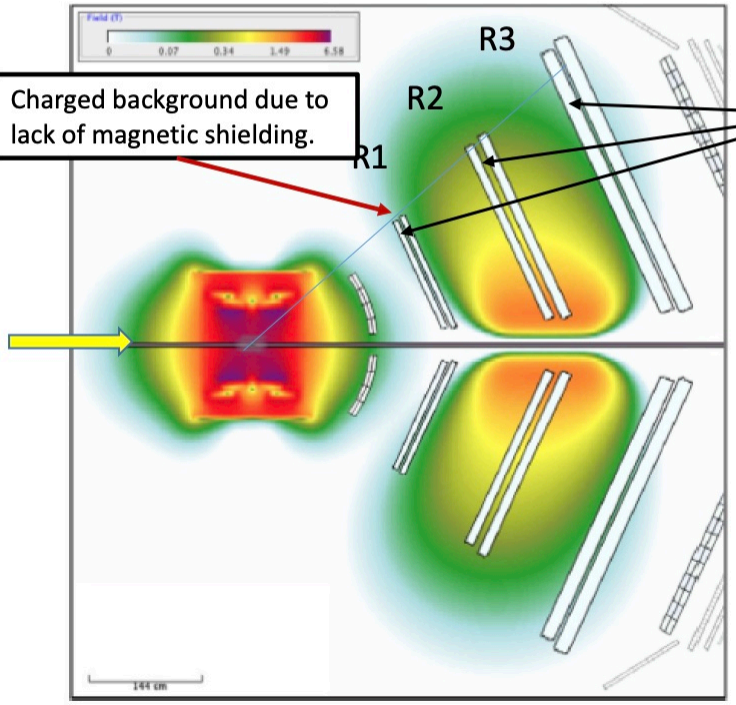
Hall B at high intensity/energy

CLAS12 to operate @ 24GeV at 10.6 GeV luminosities?

- CLAS12 luminosity limited by accidental occupancy of DC R1.



High occupancy in part of R1 limits acceptable operating luminosity.
➔ **higher resolution tracking layers**

	R1	R2	R3
CLAS12 @ 11	**2.6%**	**0.76%**	**1.18%**
CLAS12 @ 22	**2.8%**	**0.77%**	**1.23%**

Z. Meador, L. Elouadrhiri

Accidental occupancies increase by less than 10% at 24 GeV compared to 11 GeV.

Additional μ–RWELL tracking layers under development enabling increase in CLAS12 operating luminosity by 2.

S. Stepanyan

Phase 2: Higher Energy + SHMS/new VHMS

New spectrometer with higher momentum and small angle capability

HMS → VHMS "very high momentum spectrometer"

VHMS: θ_{min}=5.5 deg., P_{max}=15 GeV

Opening angle between VHMS-SHMS ~ 20 degrees

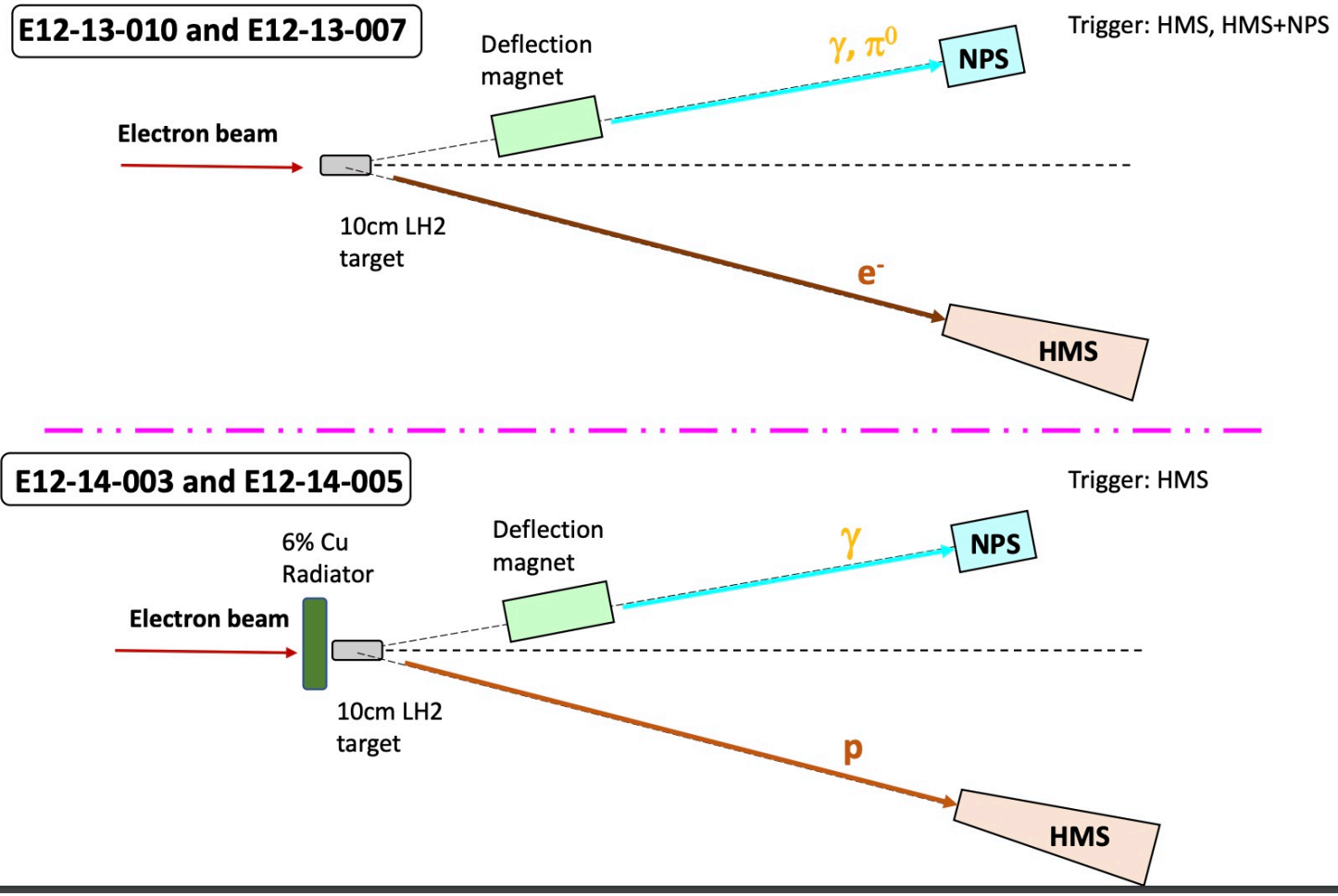
Increase Q^2 reach to 15 GeV^2
→ Higher precision at Q^2=10, 11.5

E_{Beam}	θ_{SHMS} (e')	P_{SHMS} (e')	θ_{VHMS} (π+)	P_{VHMS} (π+)	Time
Q^2=8.5 W=4.18 $-t_{min}$=0.15 $\Delta\varepsilon$=0.28					
17.0	21.39	3.63	5.55	13.29	20.5
22.0	12.15	8.63	7.62	13.29	1.8
Q^2=10.0 W=4.08 $-t_{min}$=0.21 $\Delta\varepsilon$=0.30					
17.0	24.49	3.27	5.52	13.62	53.3
22.0	13.46	8.27	7.85	13.62	4.3
Q^2=11.5 W=3.95 $-t_{min}$=0.29 $\Delta\varepsilon$=0.31					
17.0	27.34	3.03	5.55	13.82	124.8
22.0	14.66	8.03	8.12	13.82	9.3
Q^2=13.0 W=3.96 $-t_{min}$=0.35 $\Delta\varepsilon$=0.25					
18.0	27.55	3.18	5.54	14.63	209.5
22.0	16.49	7.18	7.69	14.63	24.4
Q^2=15.0 W=3.73 $-t_{min}$=0.52 $\Delta\varepsilon$=0.26					
18.0	30.24	3.06	5.73	14.66	560
22.0	17.88	7.06	8.07	14.66	65.7

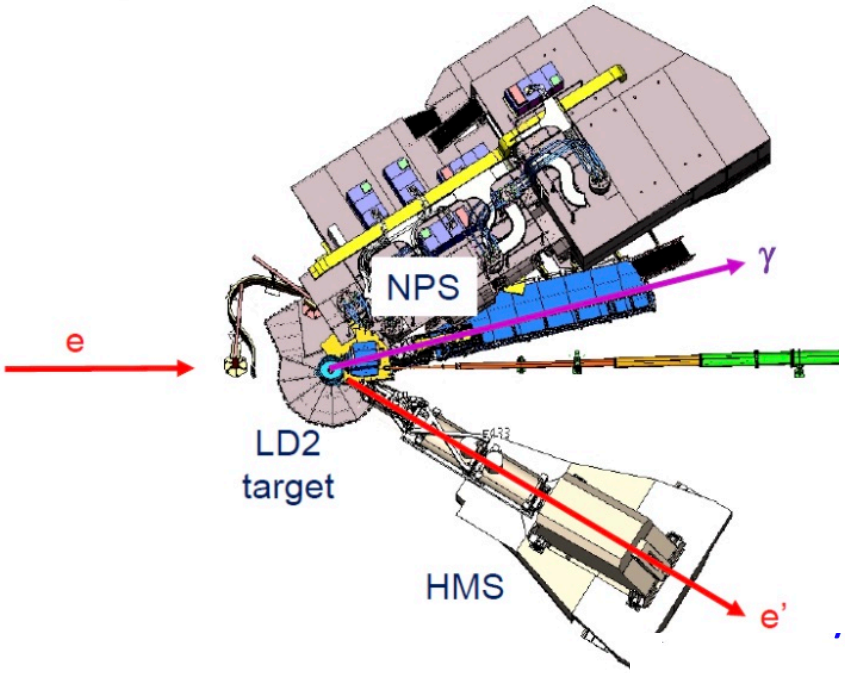
NPS at Hall C

Experimental Techniques

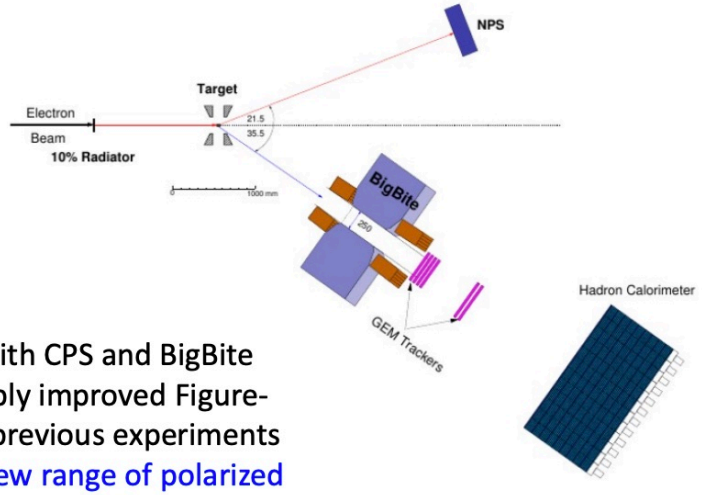
The Neutral Particle Spectrometer (NPS) is a new facility in Hall C. Utilizing the well-understood HMS/SHMS infrastructure, it allows for **precision (coincidence) cross section measurements of neutral particles (γ and π^0)**.



NPS at Hall C



Versatility – combine NPS with other equipment in Hall C



Combining NPS with CPS and BigBite gives a considerably improved Figure-of-Merit over all previous experiments and opens up a new range of polarized physics opportunities at Lab