

G_{En}/G_{Mn} by Recoil n Polarimetry

To be submitted PAC-39, June 2012

Hall-A collaboration status will be sought (submission April)

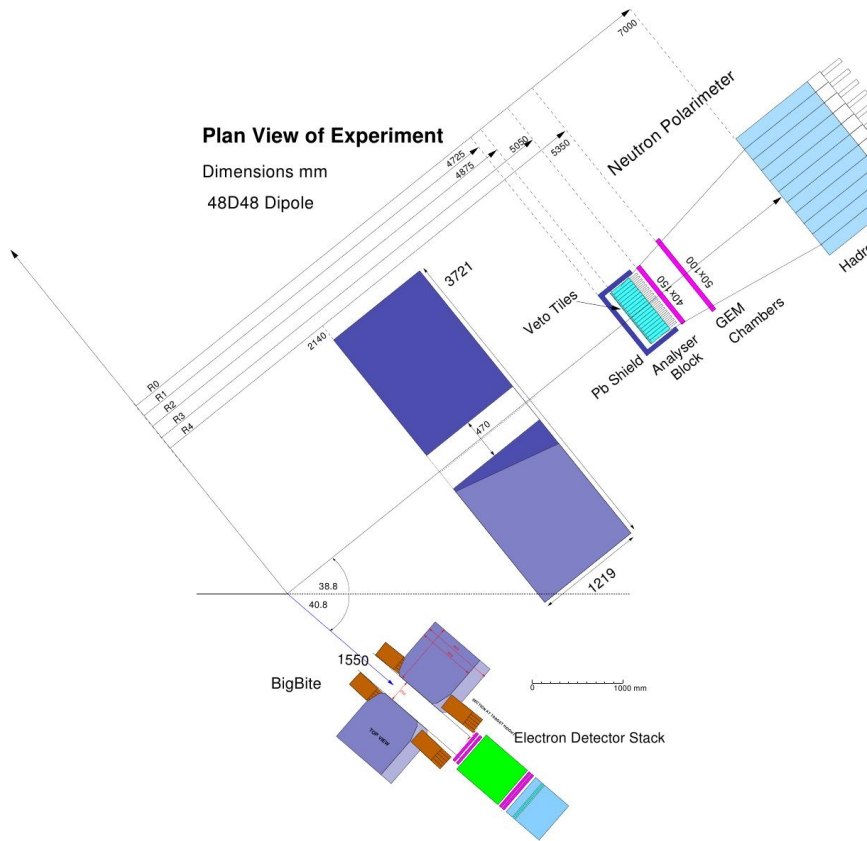


Figure 10: Plan view of experiment $Q^2 = 1.5 \text{ (GeV/c)}^2$

Setting	$Q^2 \text{ (GeV/c)}^2$	$E_e \text{ (GeV)}$	$p_{e'} \text{ (GeV)}$	$\theta_e \text{ (deg.)}$	$\theta_n \text{ (deg.)}$
1	1.5	2.2	1.40	40.8	38.8
2	2.0	2.2	1.14	52.8	31.1
3	3.0	4.4	2.81	28.5	34.7
4	4.0	4.4	2.24	37.3	27.5
5	6.0	6.6	3.40	30.0	25.0

Table 2: Kinematic Settings. Elastic $n(e,e'n)$ values

$\langle Q^2 \rangle$ (GeV/c) ²	$\langle \Omega_{e'} \rangle$ (msr)	$\langle \Omega_{e',n} \rangle$ (msr)	$\langle \sigma_n(\theta) \rangle$ (pb/sr)	Rate (Hz)	Time (hr)	$\delta R/R$ (stat)	$\delta R/R$ (sys)
1.5	78	63	1236	687	4	0.025	0.03
2.0	75	74	218	142	20	0.026	0.03
3.0	74	50	239	105	24	0.049	0.03
4.0	78	75	24.8	16.4	150	0.051	0.03
6.0	75	70	5.8	3.58	500	0.102	0.03

Table 7: Counting rate and error estimate for $n(e, e'n)$ for an incident (neutron) luminosity of $1.26 \times 10^{38} \text{ cm}^{-2}\text{s}^{-1}$. The angle brackets denote averaging over the acceptance of the detector system. "Rate" is the detected $n(e, e'n)$ rate which accounts for solid angle and detection efficiency.

Apparatus very similar to G_{Mn}/G_{Mp} ratio experiment.

Major addition: array of plastic scint. analyzer blocks ~ 800 , $40 \times 40 \times 250 \text{ mm}$ BaBar PMTs.