



Hall A Equipment and Safety Documents for Argon (e,e'p) Experiment (charge items 5 – 8)

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Classic Hall A Experiment

- The Hall A HRS were built for $(e, e'p)$ experiments, so this is a very straight forward measurement.
- Only new piece of equipment is the target.
- “New” hardware will be putting together the coincidence trigger again.
 - NIM Logic & Single To Trigger Supervisor
 - Excellent Learning Opportunity
 - Also Needs to be done for $^3\text{He}/^3\text{H}$ $(e, e'p)$

Charge Item 6

Jobs To Conduct The Experiment (COO)

- During running, at least two people on each shift
 - Shift Leader
 - Target Operator
 - 3rd person on shift is highly desirable!
- Run coordinator (postdoc)
 - Point of contact during an experiment
 - Attend daily MCC meetings and weekly meetings
 - Keep both shift crews and spokespersons informed
- Physics Division Liaison (B. Sawatzky)
- Accelerator Division Liaison (Y. Robin)
- Target group will see to the installation of the new target.
- Standard Hall A equipment (Jefferson Lab**)

Charge Item 5



Jefferson Lab

Analysis of Data

- Monte Carlo's done with support from Omar Benhar (theory).
- Two Ph.D. Students (Virginia Tech)
 - Hongxia dai
 - Matt Murphy
- Virginia Tech also hiring a new postdoc.
- HRS (e,e'p) events will be analyzed with the Hall A analysis code.
- Tricky part of an (e,e'p) experiment is getting the solid angle from Monte Carlo.
 - We have a great starting point with MCEEP & SIMC
 - In collaboration with other Hall A groups, we need to continue to work on improving new Q1 models.

Charge Item 7

Readiness of Equipment & Documentation

- Current DVCS/GMP Experiments Using HRS (single arm triggers)
- Upcoming Tritium Experiments Also Using HRS and by the time we run Ar(e,e'p) we will have quite some experience with the new Q1 magnets
- COO, ESAD, and ERG have been updated and posted on the Argon wiki.
 - Thank you to Bert for looking them over!

Charge Item 8



Jefferson Lab

Radiation Budget Estimate

- Moderate Radiation Experiment
- < 4% Site Boundary Dose Over An 18 Calendar Day Period (9 PAC days)
- No additional shielding required.

Energy	GeV	2.2	2.2	2.2		
Current		25.0	25.0	25.0		
Element		Ar	C	Ti		
Thickness	mg/cm2	1000.0	450.0	675.0		
Element		Al				
Thickness	mg/cm2	100.0				
Time	days	8.0	0.5	0.5		
estimated						
Dose Rate	urem/hr	1.9	0.3	2.6		
conservative						
dose/setup	urem	364.0	3.8	30.7	398.6 urem total	
					less then 4% Annual Budget	

Charge Item 8

Summary of Charge Items (5 - 8)

- **Item 5.** Jobs to carry out the exp. are defined in the COO. The one new piece of equipment is the target which will be built and installed by target group.
- **Item 6.** Standard equipment experiment. Points of contact in ESAD & Operations Manual. Emergency contacts in ERG.
- **Item 7.** The standard equipment has responsible staff while the analysis will be done by users (VT/UVA/Jlab/INFN). Two Ph.D. students and a postdoc.
- **Item 8.** COO/ESAD/ERG complete and a moderate radiation experiment. We get a final RSAD from Radcon. Hall A has already demonstrated it can handle the rates; but we do need to work with the $^3\text{He}/^3\text{H}$ (e,e'p) SRC group to get the HRS coincidence trigger re-established.