

Test on RO: PMT basis, mixer, amplifier

We started by calibrating the lead module, which had been centered in the beam using previous runs not listed here (see logbook), using an 80 GeV e- beam. We used CAEN ADCs to read out the signals and moved the table to point the beam to the center of the different towers. We then followed with a repeat of these measurements with the beam centered in tower 3 only at different electron beam energies. The table gives the online analysis of these runs.

Tower	Run	ADC C	ADC S
4	6928	817	773
3	6929	815	775
2	6930	817	833
1	6931	819	857

Moving back to tower 3 (note run 6929 matches these conditions), we took data at additional energies:

e- Energy (GeV)	Run	ADC C	ADC S
150	6933	1220	1660
125	6936	1117	1310
100	6934	1011	1068
50	6935	441	371
30	6932	207?	152?

These results show significant non-linearity in the ADC response. There followed an extensive set of runs in which HV variations, capacitive coupling, and different ADC's were tried. The results were not significantly different, so we switched to using oscilloscope readout for the remainder of the studies. Online results will not be repeated here, since they require more extensive analysis, but the settings for the oscilloscope scales are recorded here for convenience.

Energy scan with different PMT Bases

Electron beam, centered in tower 3 S3, C3 only low gain channel;

Tapered PMT bases

HV settings: C3 = 830 V; S3 = 635 V logbook pages 60-68

e- Energy (GeV)	Run S3L	S3L scope scale (V/div)	Run C3L	C3L scope scale (V/div)
20	6962	0.05	6981	0.1
30	6956	0.1	6973	0.1
50	6957	0.1	6976	0.2
80	6954	0.2	6977	0.5
80	6955	0.1	---	---
100	6959	0.2	6978	0.5
125	6960	0.2	6979	0.5
150	6961	0.2	6980	0.5

HV settings: C3 = 715 V; S3 = 610 V logbook pages 60-68

e- Energy (GeV)	Run S3L	S3L scope scale (V/div)		Run C3L	C3L scope scale (V/div)
20	7074, 7075	0.05	0.05		
30	7064	0.05	0.05		
50	7063	0.1	0.1		
80	7060, 7061	0.1	0.1		
100	7065	0.1	0.1		
125	7066	0.2	0.2		
150	7067	0.2	0.2		

Standard PMT bases

HV settings: C3= 570 V ; S3 = 480 V logbook pages 69 - 71

e- Energy (GeV)	Run	C3L scope scale (V/div)	S3L scope scale (V/div)
20	7001	0.05	0.05
30	7000	0.1	0.1
50	6999	0.1	0.1
80	6991	0.1	0.1
100	6997	0.1	0.2
125	6998	0.2	0.2
150	6993	0.2	0.2

Tapered PMT bases with independed last dynode

Configuration with polarization of last dynode which maximize the signal output HV settings: C3 = 715 V ; S3 = 620 V; Dy_C3 = 35.5 V; Dy_S3 = 31 V

e- Energy (GeV)	Run	C3L scope scale (V/div)	S3L scope scale (V/div)
20	7026	0.05	0.1
30	7018	0.05	0.05
50	7025	0.05	0.1
80	7012	0.1	0.2
100	7022	0.1	0.2
125	7021	0.2	0.2
150	7016	0.2	0.2

Configuration with polarization of last dynode which reproduce the tapered base HV settings: C3 = 715 V ; S3 = 620 V; Dy_C3 = 77.5 V; Dy_S3 = 67 V

e- Energy (GeV)	Run	C3L scope scale (V/div)	S3L scope scale (V/div)
20	7027	0.05	0.1
30	7019	0.05	0.05
50	7024	0.05	0.1
80	7013	0.1	0.2
100	7023	0.1	0.2
125	7020	0.2	0.2
150	7015	0.2	0.2

Light Mixer test

Analyzing data in T3; tapered bases; No veto HV settings: C3 = 715 V ; S3= 610 V

Mixer	Run	C3L scope scale (V/div)	S3L scope scale (V/div)
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-- AlanSill - 21-Jul-2012

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