

Using Pulsar Signals Originating in Vault and going through detector signal cables

The percent difference in the table indicates the order of magnitude of the upper limit of the expected systematic error in measured fluence during an actual run.

	Feb. 2024 Pulsar Frequency = 1.004 kHz			Feb. 2025 Pulsar Frequency = 1 kHz			Feb. 2026 Pulsar Frequency = 1 kHz		
Pulsar Frequency = 823 Hz									
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)	59921	300900	903967	59920	300900	904000	60070	301100	902400
Calculated Counts	60038	301103	904374	60040	301100	904400	60170	301300	903600
Percent Difference	0.196%	0.067%	0.045%	0.20%	0.07%	0.045%	0.17%	0.07%	0.134%
	Pulsar Frequency=10.1 kHz			Pulsar Frequency=10 kHz			Pulsar Frequency=10 kHz		
Pulsar Frequency = 6494 Hz									
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)	601300	3022600	9050333	601300	3023000	9050000	603600	3027000	9085000
Calculated Counts	602372	3025430	9043399	602400	3025000	9043000	604800	3030000	9094000
Percent Difference	0.18%	0.09%	0.08%	0.18%	0.09%	0.08%	0.20%	0.09%	0.10%
	Pulsar frequency=60 kHz			Pulsar frequency=60 kHz			Pulsar frequency=60 kHz		
Pulsar Frequency = 23810 Hz									
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)	3594500	17988000	53980000	3595000	17990000	53980000	3630000	18190000	54540000
Calculated Counts	3601460	18003624	54002338	3601000	18000000	54000000	3638000	18210000	54590000
Percent Difference	0.19%	0.09%	0.04%	0.19%	0.09%	0.04%	0.22%	0.09%	0.09%

Using Pulsar Signals in place of detector signals and measuring fluence with SEUSS

The percent difference in the table indicates the order of magnitude of the upper limit of the expected systematic error in measured fluence during an actual run.

	Feb. 2024 Pulser Frequency = 1.004 kHz			Feb. 2025 Pulser Frequency = 1.007 kHz			Feb. 2026 Pulser Frequency = 1.064 kHz		
Pulser Frequency									
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)	60160	301540	905100	60160	301500	905100	63710	319000	957700
Calculated Counts	60279	302048	906109	60280	302000	906100	63830	319200	957900
Percent Difference	0.20%	0.17%	0.11%	0.20%	0.17%	0.11%	0.19%	0.07%	0.11%
	Pulser Frequency= 10 kHz			Pulser Frequency= 10 kHz			Pulser Frequency= 10 kHz		
Pulser Frequency									
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)	598350	2992000	8983333	598400	2992000	8983000	605400	3040000	9120000
Calculated Counts	599718	2994874	8989177	599700	2995000	8989000	606200	3042000	9124000
Percent Difference	0.23%	0.10%	0.07%	0.23%	0.10%	0.07%	0.14%	0.06%	0.05%
	Pulser Frequency= 60 kHz			Pulser Frequency= 60 kHz			Pulser Frequency= 60 kHz		
Pulser Frequency									
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)	3592400	18010000	54026667	3592000	18010000	54030000	3631000	18160000	54490000
Calculated Counts	3601152	18028608	54081915	3601000	18030000	54080000	3637000	18170000	54520000
Percent Difference	0.24%	0.10%	0.10%	0.24%	0.10%	0.10%	0.18%	0.07%	0.04%

Using Stroboscope to Test PMTs

The percent difference in the table indicates the order of magnitude of the upper limit of the expected systematic error in measured fluence during an actual run.

	Feb. 2023 Strobe Frequency = 60 Hz			Feb. 2025 Strobe Frequency = 10 Hz			Feb. 2026 Strobe Frequency = 100 Hz		
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)				612	3067	9203	5984	29980	89930
Calculated Counts				62	3087	9261	5997	30010	90020
Percent Difference				0.75%	0.64%	0.63%	0.22%	0.10%	0.10%
	Intermediate frequency test not performed			Strobe Frequency = 70 Hz			Strobe Frequency = 1000 Hz		
				60	300	900	60	300	900
Measured Counts (SEUSS)				4.15E+03	2.10E+04	6.28E+04	6.00E+04	2.99E+05	8.99E+05
Calculated Counts				4.16E+03	2.10E+04	6.29E+04	6.01E+04	3.00E+05	9.00E+05
Percent Difference				0.25%	0.13%	0.11%	0.20%	0.29%	0.13%
	Strobe Frequency = 400 Hz			Strobe Frequency = 300 Hz			Strobe Frequency = 5000 Hz		
time (sec)	60	300	900	60	300	900	60	300	900
Measured Counts (SEUSS)	23900	120309	360300	17870	94040	282700	298500	1498000	4496000
Calculated Counts	24081	120388	360497	17910	94120	282800	299300	1499000	4501000
Percent Difference	0.75%	0.07%	0.05%	0.23%	0.09%	0.07%	0.26%	0.11%	0.11%