

# TPC Resistor Test

Thomas Alexander

Sept 30 2014

# Method

- Using an HP-3457A multimeter, I am able to record and store many measurements of the resistance of a standalone resistor. The mean and stdev of these measurements are reported in air and liquid nitrogen. None of the resistors tested are specifically from the SCENE detector, but are the same product.

# Results

Resistor	Air Res. (MOhm)	stdev (Mohms)	% error on mean AIR	LN2 Res (MOhms)	stdev (MOhms)	%Error LN2
1	100.594	0.613	0.610%	105.375	0.236	0.224%
2	99.917	0.233	0.233%	104.834	0.105	0.100%
3	99.950	0.110	0.110%	105.003	0.213	0.202%
4	100.350	0.394	0.393%	105.718	1.202	1.137%
5	99.552	0.222	0.223%	104.398	0.427	0.409%

Resistor	LN2/Air
1	1.0475
2	1.0492
3	1.0506
4	1.0535
5	1.0487

- Number of samples per measurement was between 120-160
- When dunked into LN2, a ~5% increase in resistance is observed.
- LN2/Air is important because if its the same for all the resistors, then the voltage division between rings would stay the same. The standard deviation on this value is 0.0023. I believe this shows that though the resistors change when dipped in LN2, they respond very similarly.