Bubble Update 05/17/2019

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Bubble meeting last week

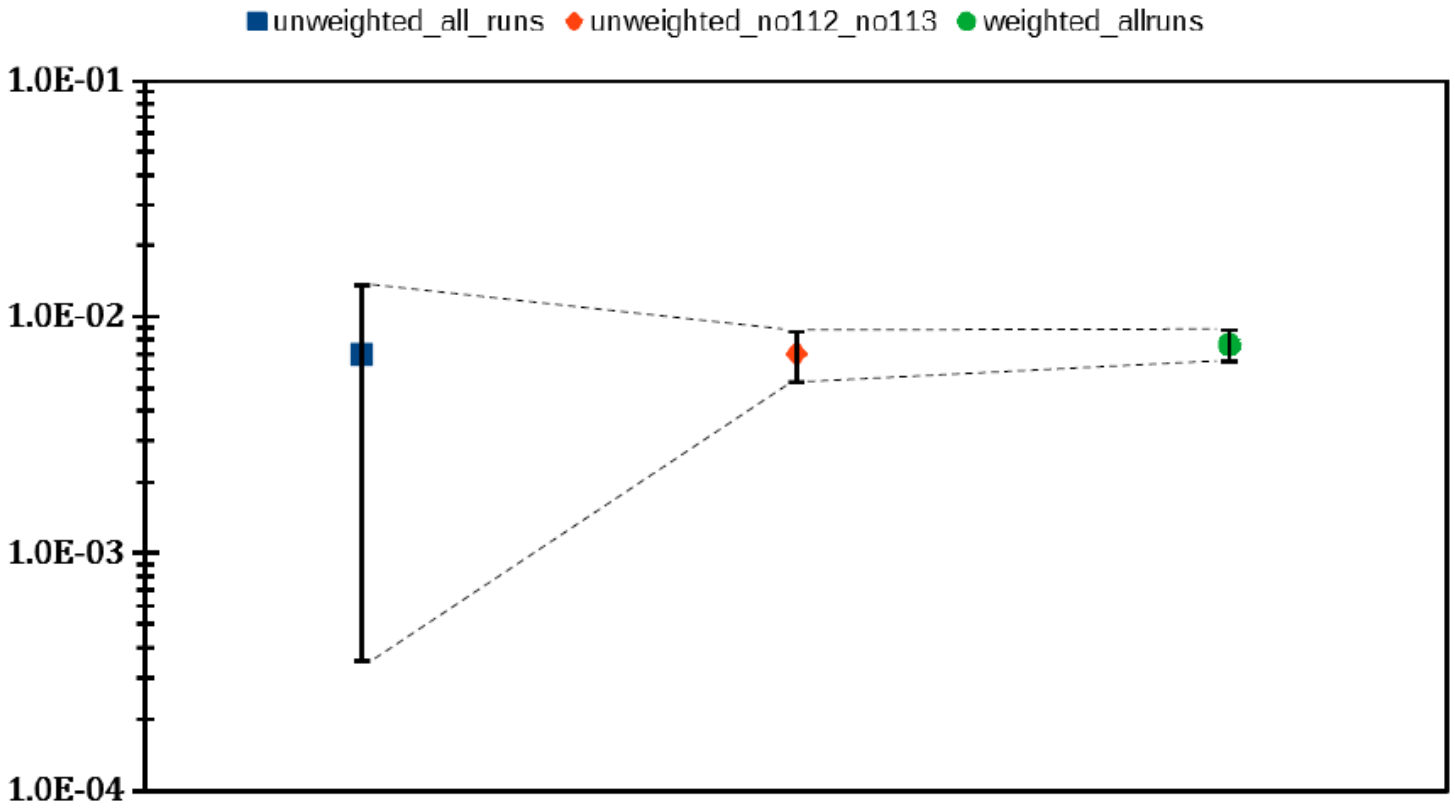
Run	I [uA]	Run Time [s]	AVG DegSuperheat	STDEV of DegSuper heat	Slope of DegSuper heat	Slope Error±	Yield
112	0.10	6331	23.458	2.309	1.795E-4	5.439E-5	2.05E-02
113	0.10	7212	23.586	2.277	5.240E-5	4.579E-5	-6.74E-03
114	2.00	3264	21.761	1.841	1.063E-4	1.430E-4	4.73E-03
115	2.00	3673	22.059	2.075	4.692E-4	1.271E-4	5.56E-03
116	2.00	3456	22.137	1.752	8.222E-5	1.220E-4	5.41E-03
117	3.00	2374	21.682	1.637	1.921E-4	2.224E-4	1.01E-02
118	2.00	3070	22.331	1.631	2.018E-4	1.320E-4	7.33E-03
122	2.00	7202	22.140	1.969	1.917E-4	6.157E-5	8.22E-03
123	2.00	7218	22.434	1.751	1.316E-4	4.223E-5	7.55E-03

5.15 MeV using weighted average

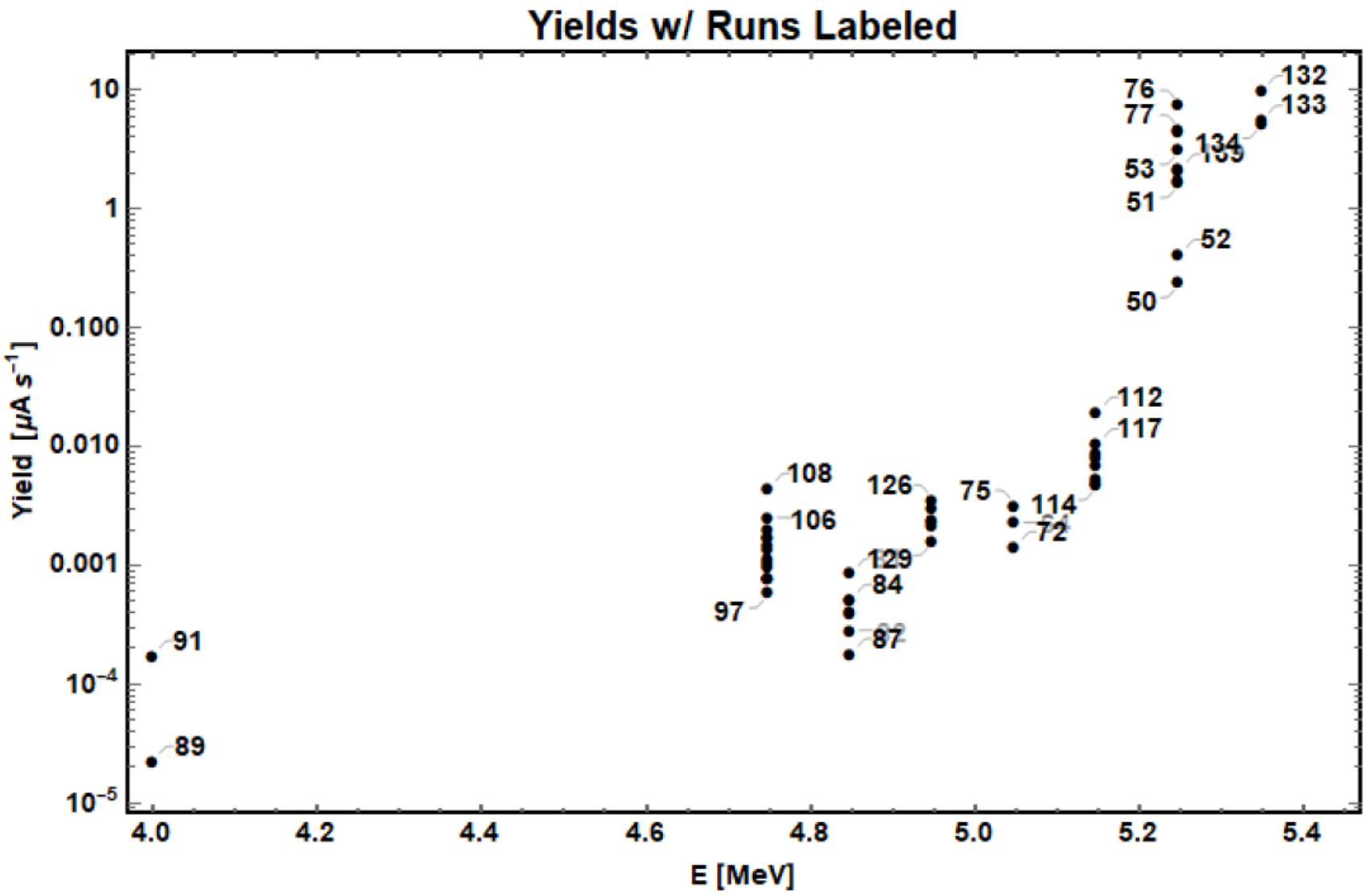
- **Use naive statistical error to weight the runs. For a given run**

$$W_{Run} \approx \frac{\sigma_{Runs\ @\ Energy}}{\sqrt{N_{FE}}}$$

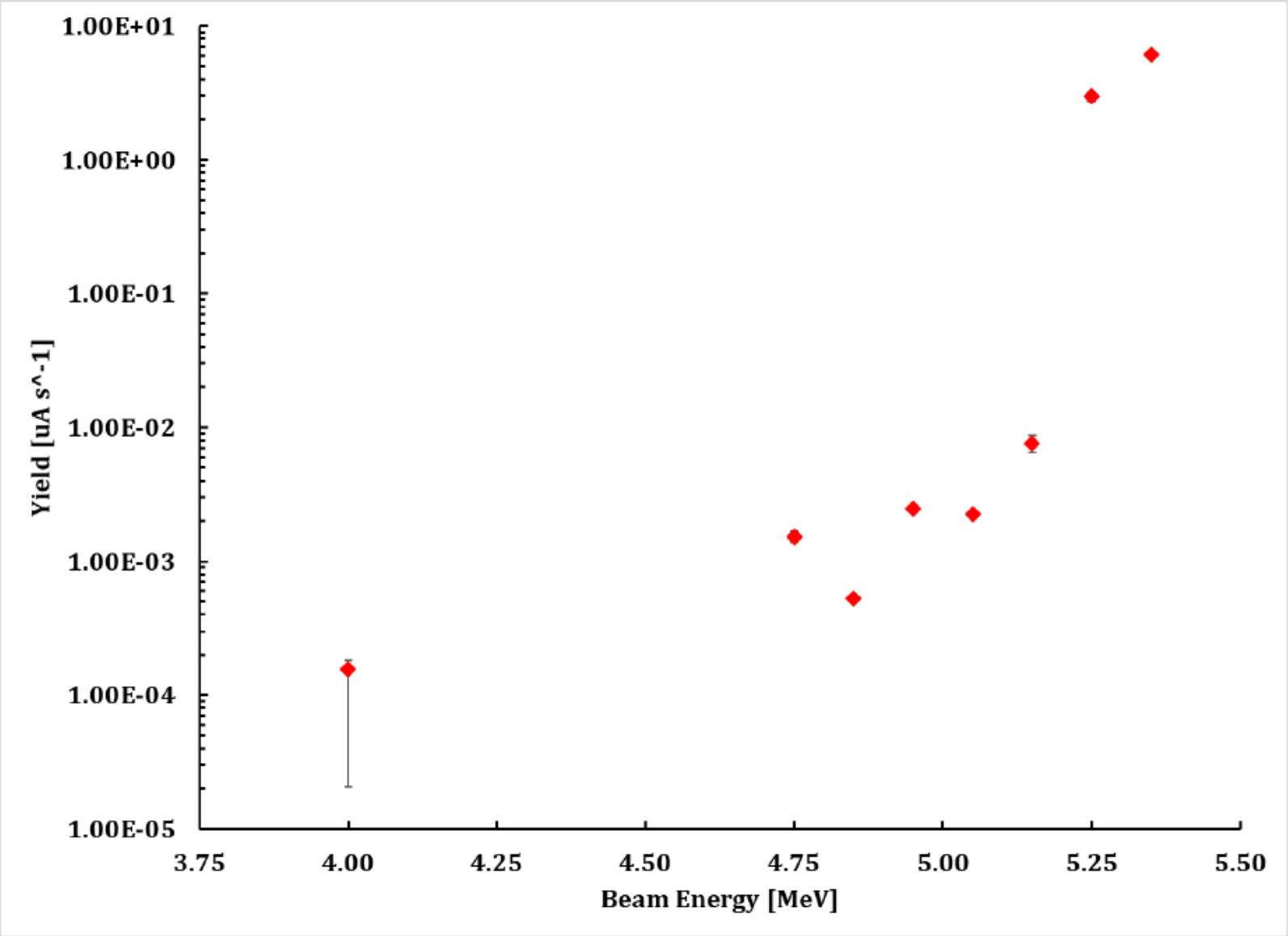
- **Then compute weighted average**



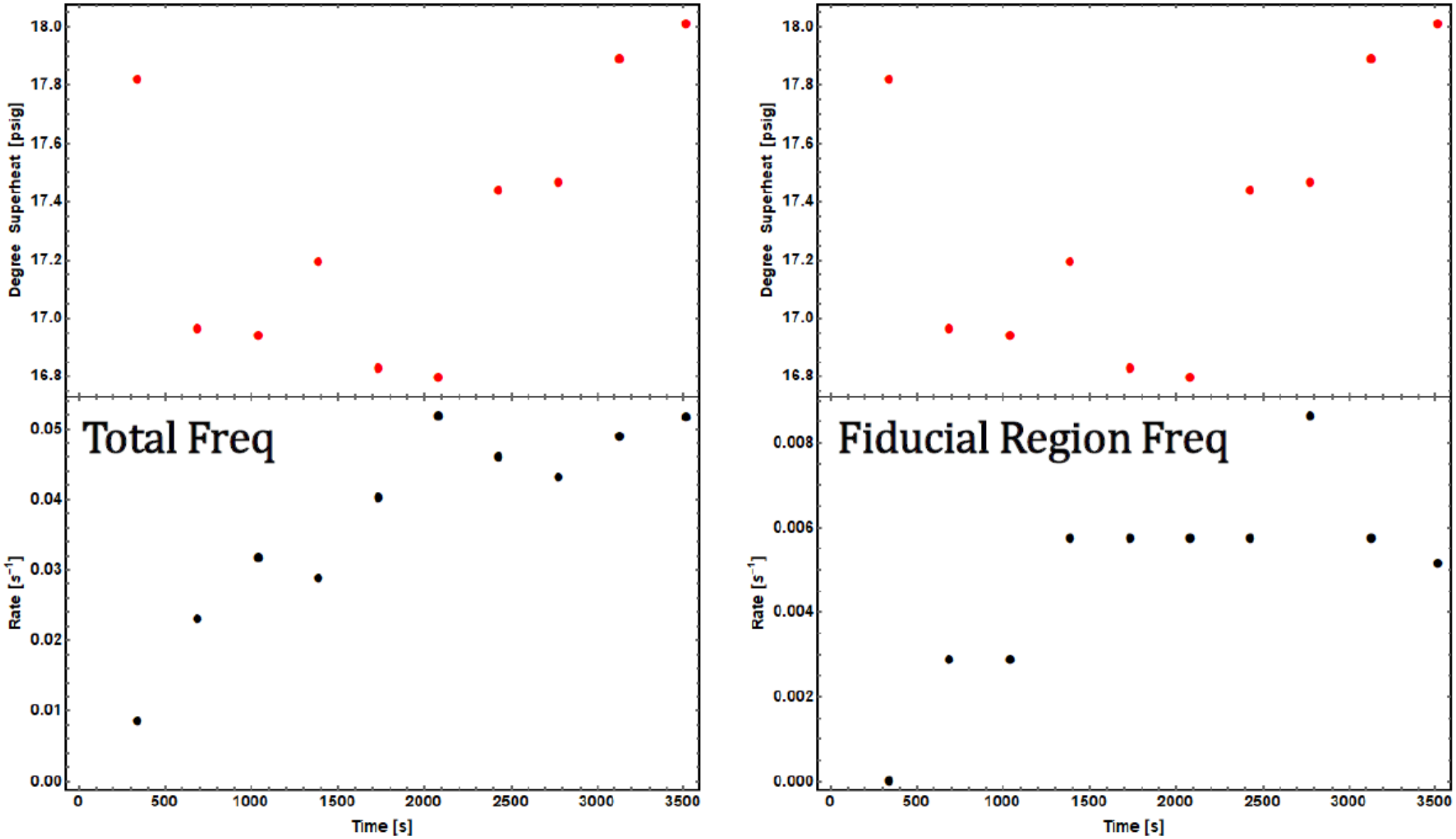
For 5.15 MeV	Yield	Stdev
Unweighted all Runs	6.6532E-03	6.6015E-03
Unweighted No 112, 113	6.9810E-03	1.7335E-03
Weighted All Runs	7.6526E-03	1.1429E-03


Yields w/ Runs Labeled
Yield [μA s⁻¹]
E [MeV]
10
1
0.100
0.010
0.001
10⁻⁴
10⁻⁵
4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
91
89
108
106
97
126
129
84
87
75
114
72
112
117
76
77
53
51
52
50
132
133
134
135

Yield plot using weighted averages



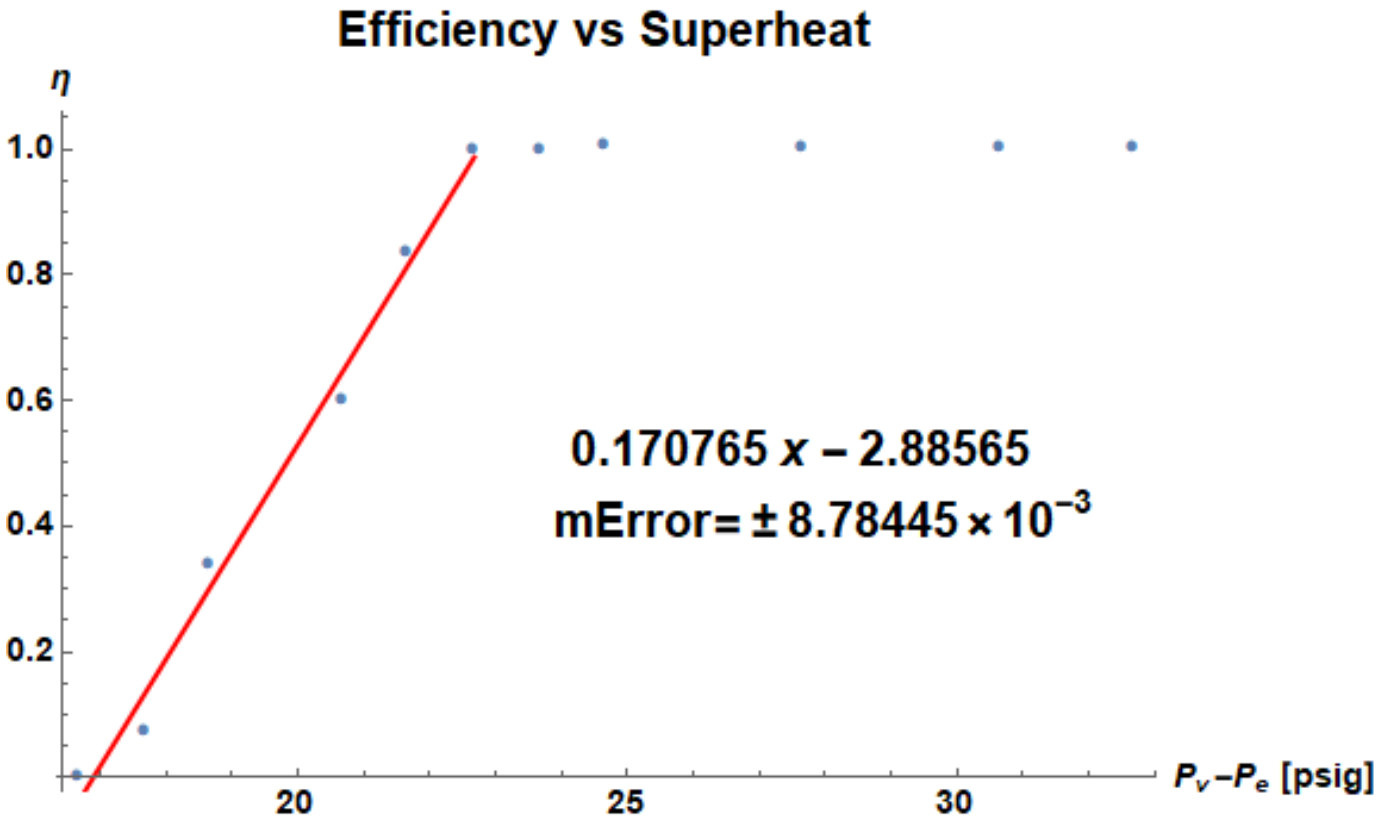
Run 63 Temperature Series



Systematics from superheat

- Data from Poesposoetjipto and Hugentobler paper
- Convert to superheat
- Fit linear part to find

$$\Delta\eta \approx 0.1708 * \Delta(P_v - P_e)$$



- Use to estimate uncertainties do to variations in superheat for all runs

Two things working on now

- Implementing the above
- Looking at the cosmic runs -> make Cosmic Rate vs Superheat (is increase in cosmic rate related to higher superheat?)