ePIC Update

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Data Links

DATA FILES
https://cernbox.cern.ch/files/link/public/PoA5TnvLyyzIEO8?tiles-size=1&items-per-page=100&view-mode=resource-table

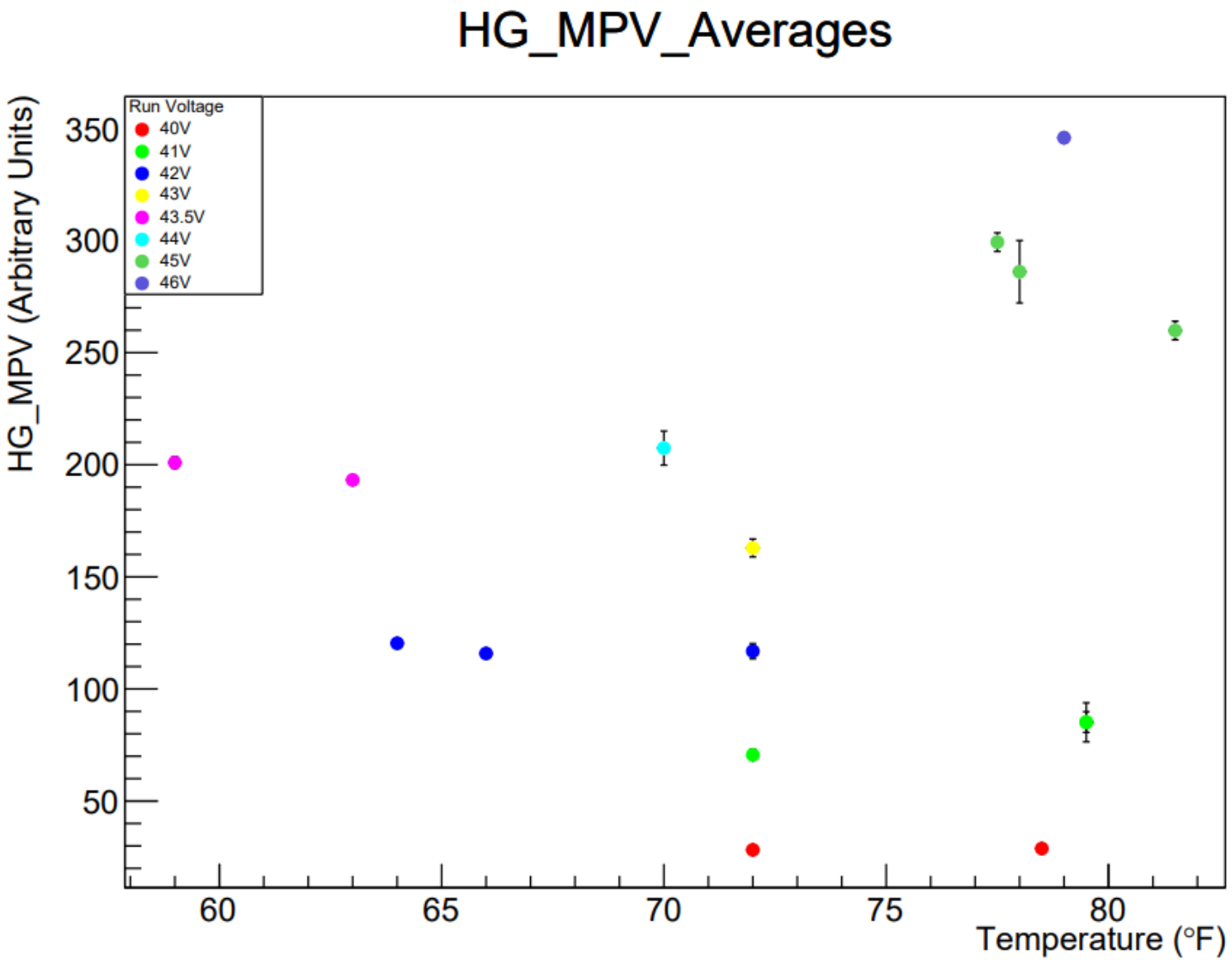
REFERENCE WIKI
https://wiki.bnl.gov/EPIC/index.php?title=LFHCal_Fall_2024_Test_Beam

ORIGINAL SPREADSHEET COPY
https://docs.google.com/spreadsheets/d/1XaiSmG4jBaBOyjbjdiNuSeehjeZC03_2A7Ccoq0nIbI/edit?gid=0#gid=0

SHARED WORKING SPREADSHEET
https://docs.google.com/spreadsheets/d/1eFIf9zpuHhEJHpiDnX0yi_t4SWDuHf2e6rELOapgVFI/edit?gid=0#gid=0

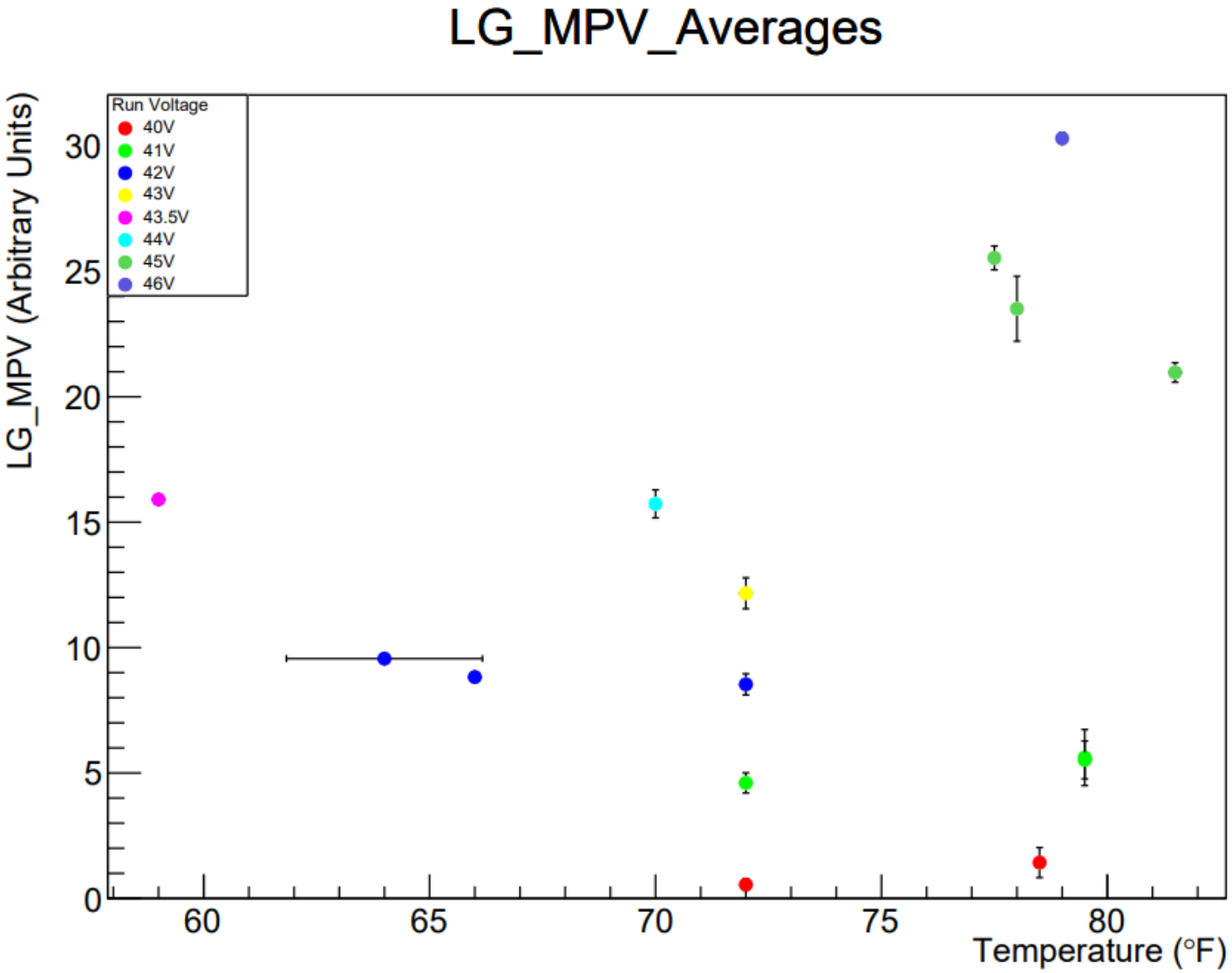
REPOSITORY
https://github.com/eic/epic-lfhcal-tbana/tree/main

Muon Group Average Landau MPV (HG)



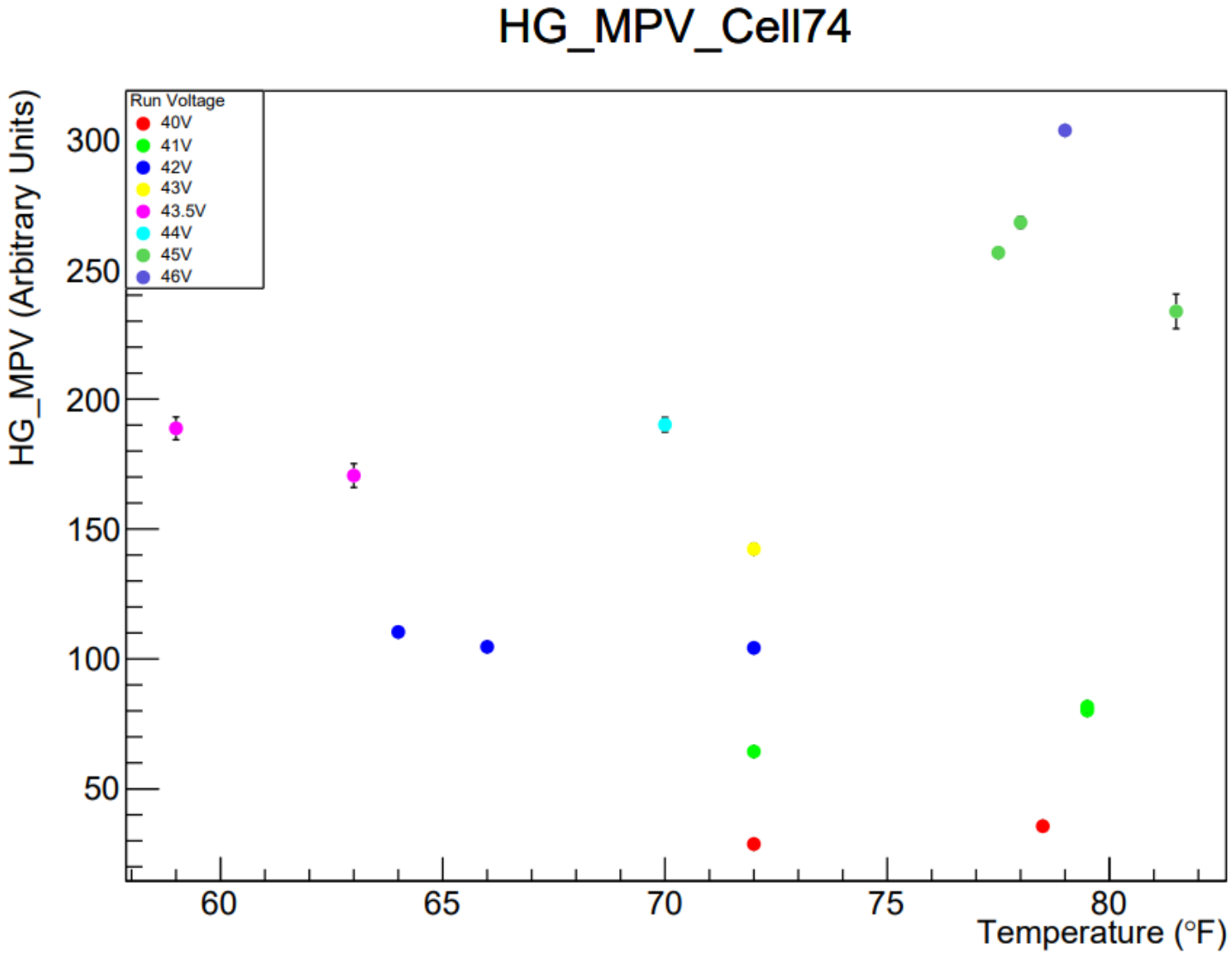
- Over these 16 muon groups, the voltage seems to have a much larger effect on the MPV value than temperature; points of the same voltage are at roughly the same height.

Muon Group Average Landau MPV (LG)



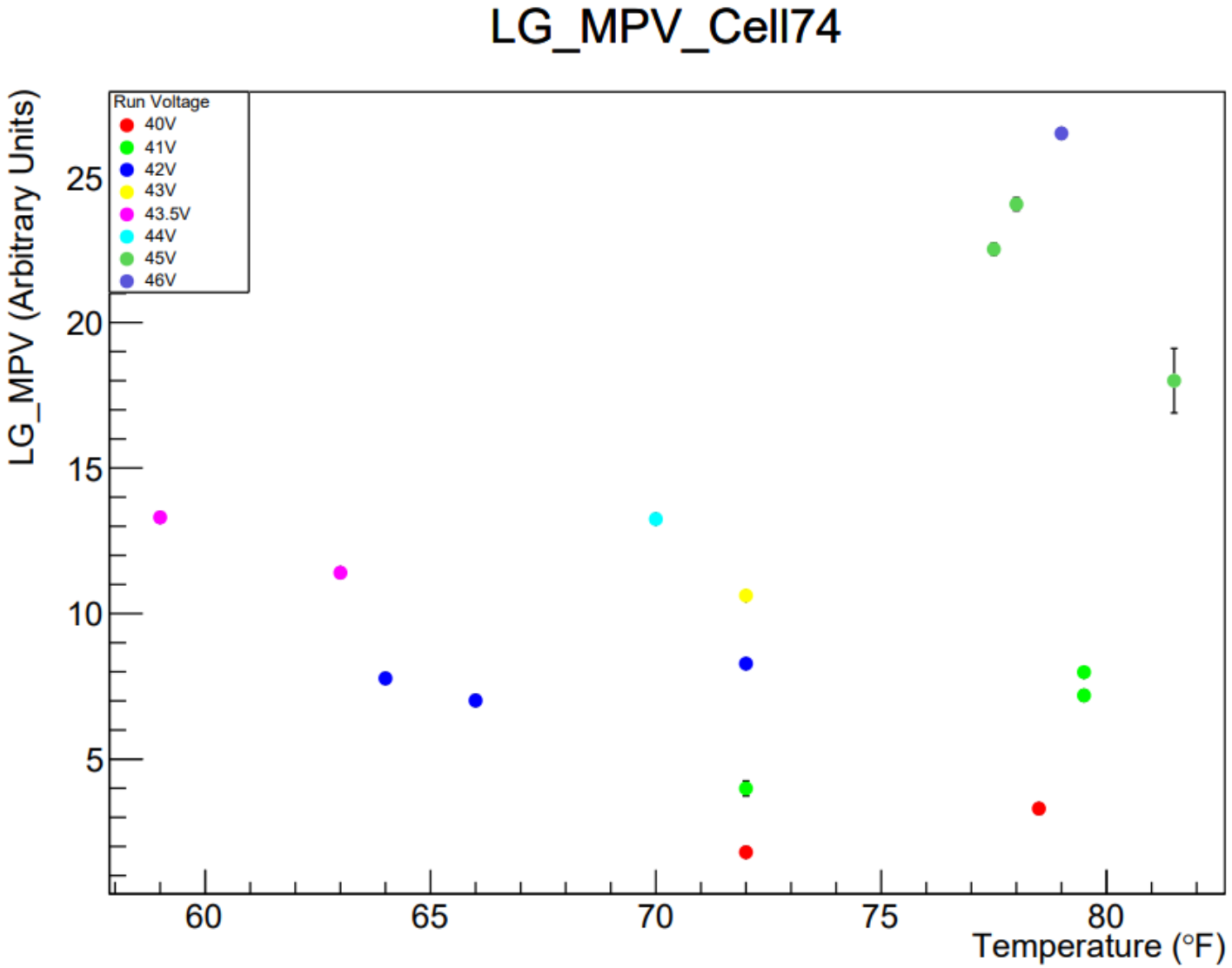
- Two of the points on the LG plot gave me trouble. The second 43.5V run refused to show up, and some points would randomly show x-axis uncertainty each time I generated the plot.

Representative Tile MPV (HG)



- I chose a tile with functioning (non-zero) Landau fits for every run

Representative Tile MPV (LG)



- The LG analysis worked much better for a single tile

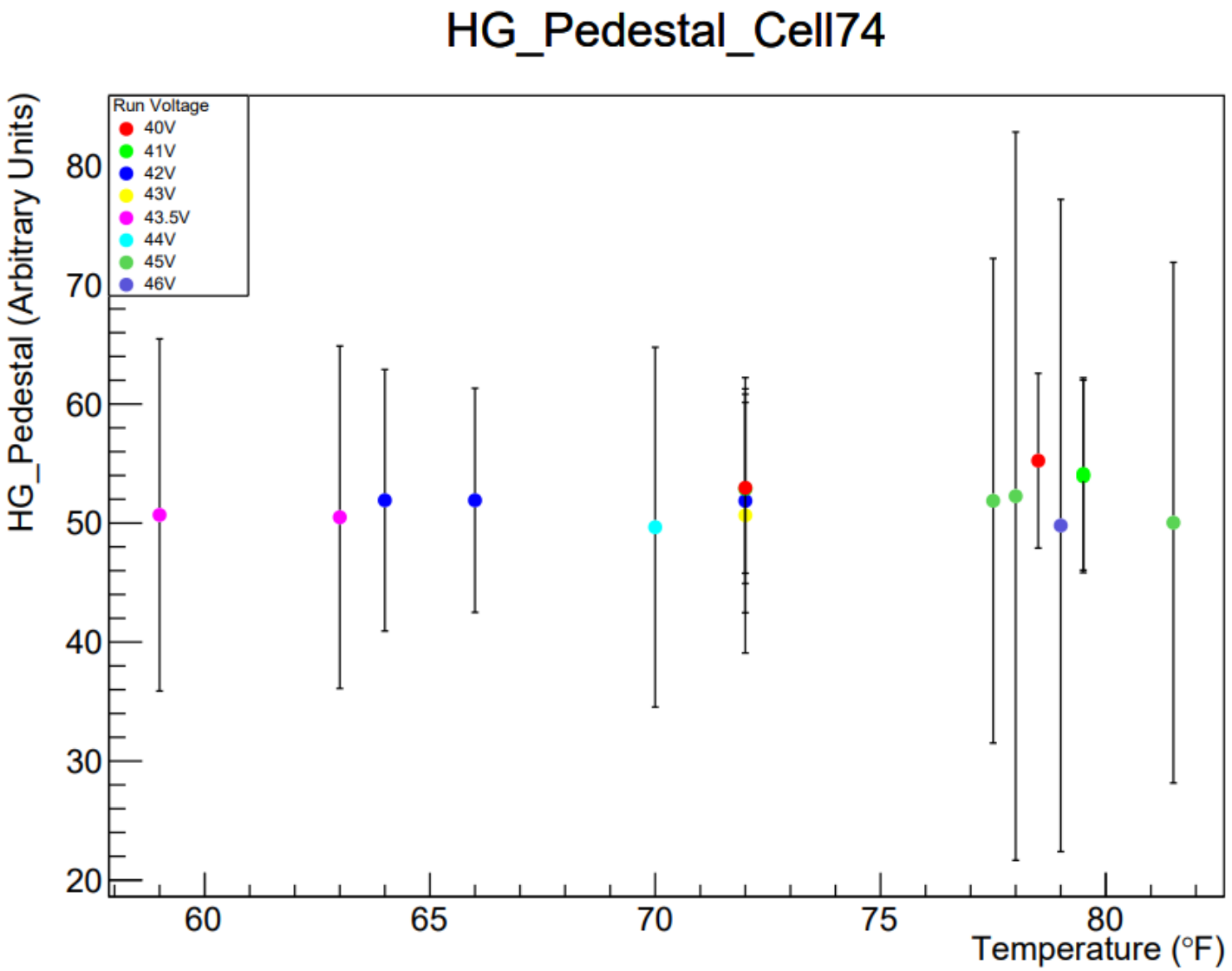
Tile vs Average

Point HG	Cell 74 MPV	Run Average MPV
43.5V	190	200
43.5V	170	190
42V	110	120
42V	100	110
44V	190	200
40V	30	30
41V	60	70
42V	100	110
43V	140	160
45V	250	300
45V	260	280
40V	35	30
46V	300	350
41V	80	80
41V	80	80
45V	230	260

Point LG	Cell 74 MPV	Run Average MPV
43.5V	13	16
43.5V	11	Missing
42V	7.5	9.5
42V	7	8.5
44V	13	15.5
40V	2	0.5
41V	4	4.5
42V	8	8
43V	10.5	12
45V	22	26
45V	23	24
40V	3	1.5
46V	26	30
41V	7	5
41V	8	5
45V	18	20.5

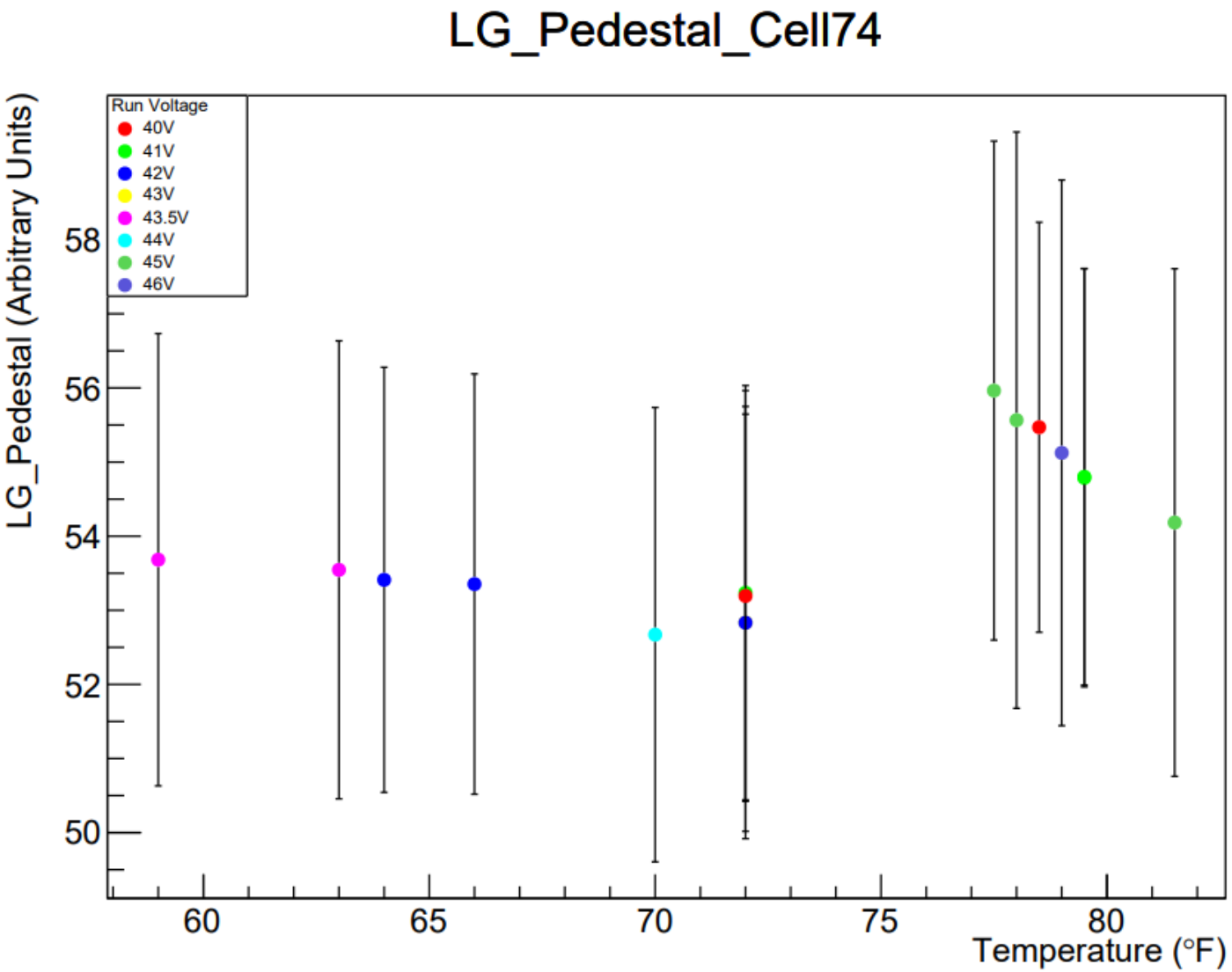
- HG Average is consistently higher by a small percentage with no wild differences. LG is mostly the same case with a few lower points, but still no statistically significant variation

Representative Tile Pedestal Gaussian Peak (HG)



- The uncertainty is set to the standard deviation, not a very good representation
- Clearly the pedestal runs are less sensitive to operating voltage and temperature

Representative Tile Pedestal Gaussian Peak (LG)



- There's a VERY subtle downward slope in the right half that ignores operating voltage, can't say much without real uncertainty