Trigger Studies

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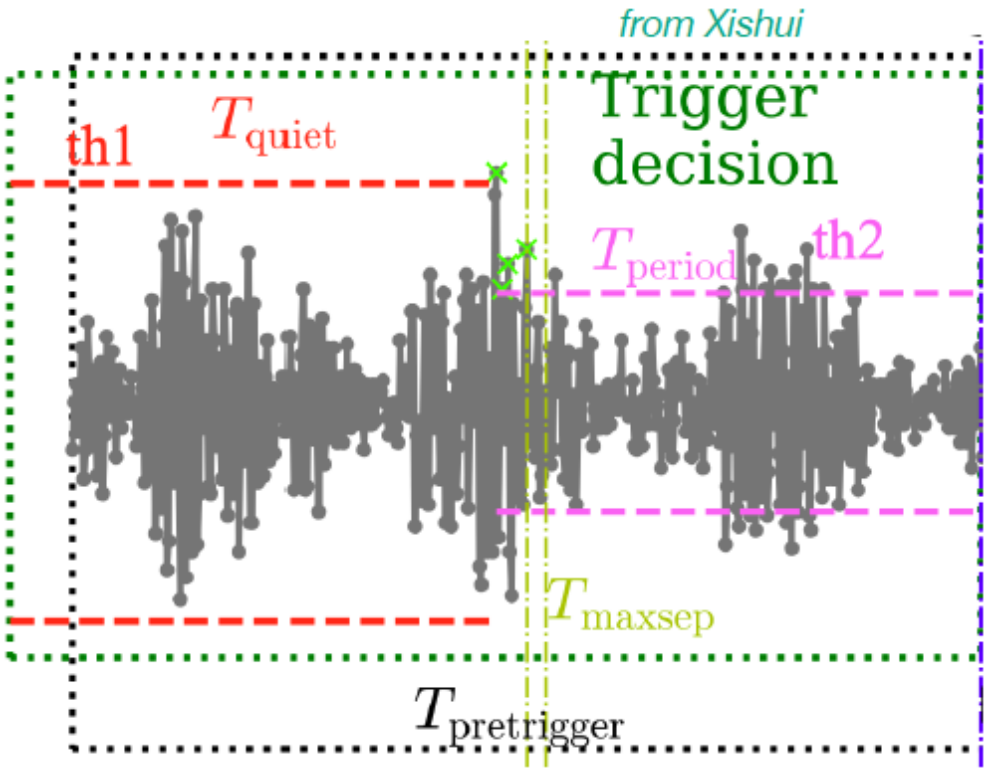
OVERVIEW

- Trigger Parameters
- Parameters Correlation
- Trigger Parameters Analysis

Trigger Parameters

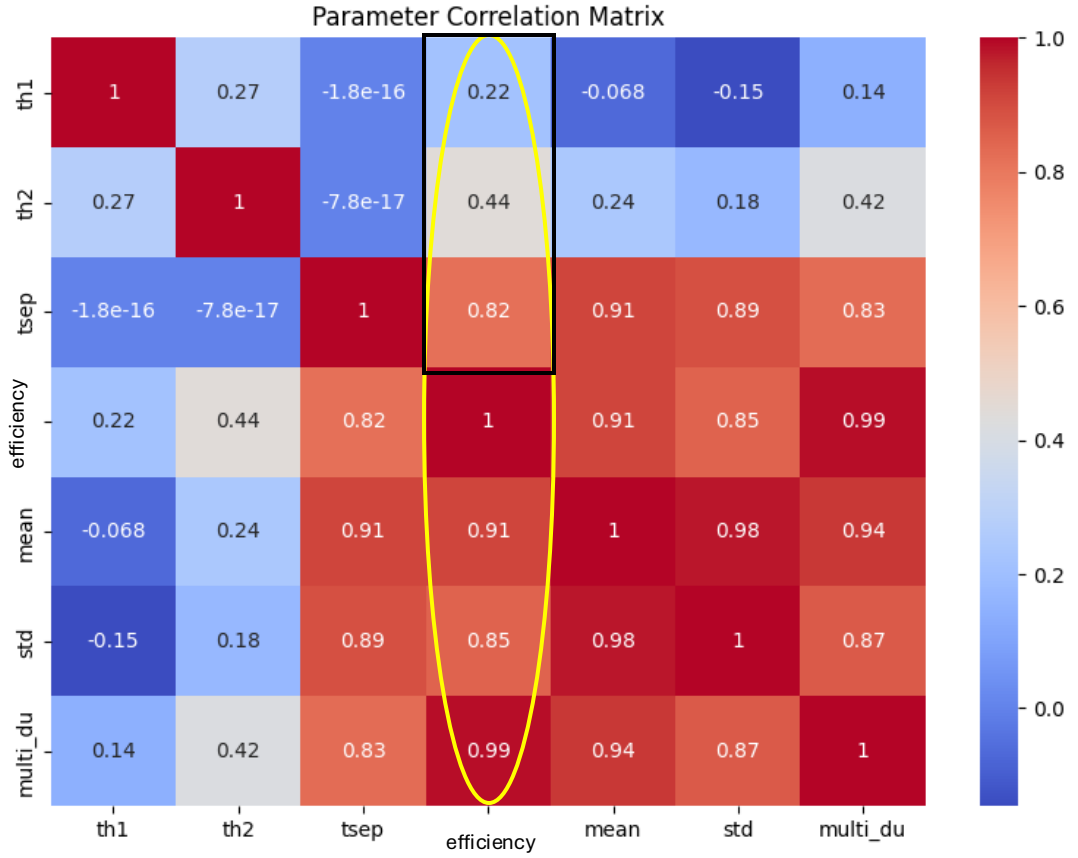
Trigger Parameter	Value
t_quiet	500
t_period	500
Tmaxsep	15,20,50
nc_min	2
nc_max	8
th1	50,55,60,70
th2	35,40,48,60



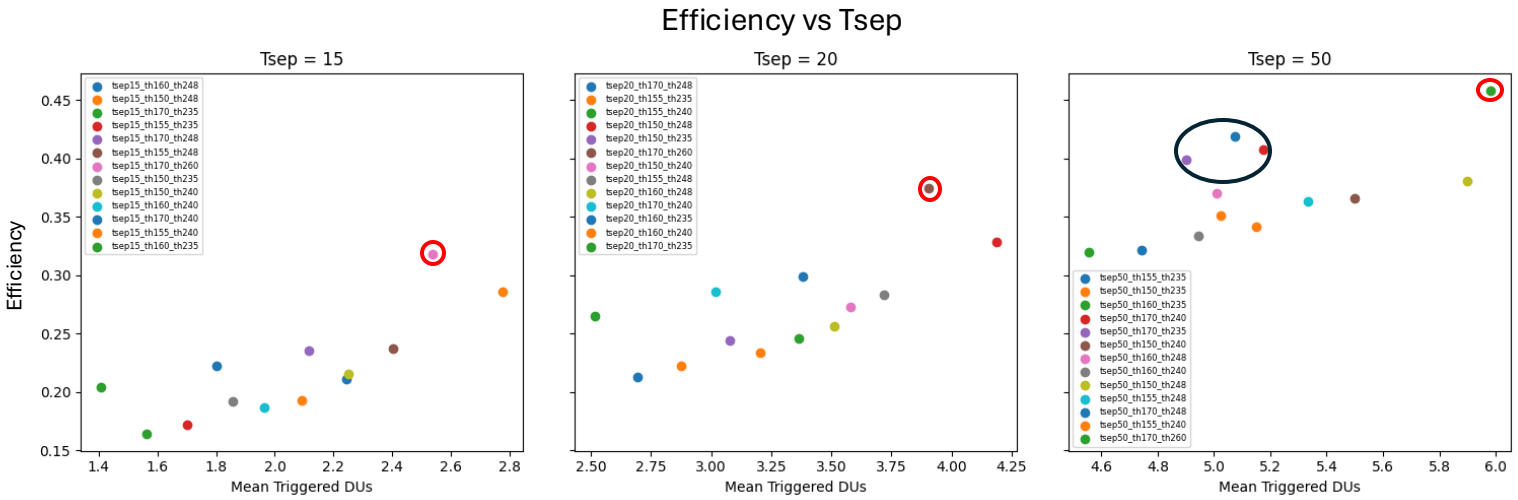
Parameters Correlation

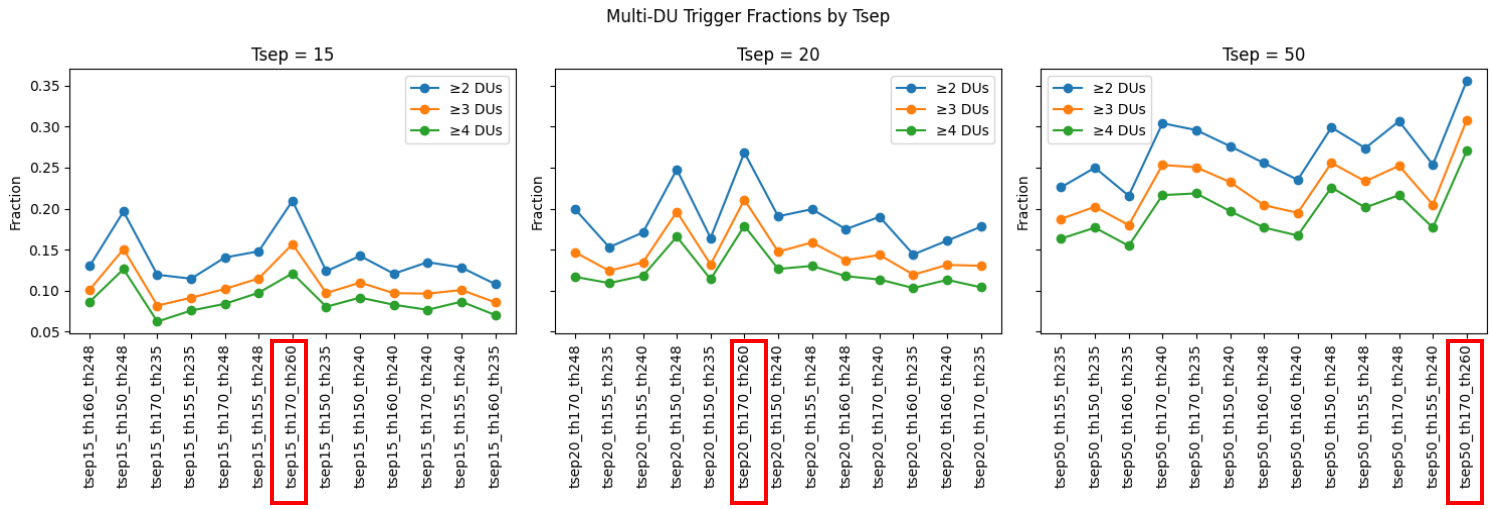
The Pearson correlation coefficient

$$r_{XY} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2} * \sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}}$$



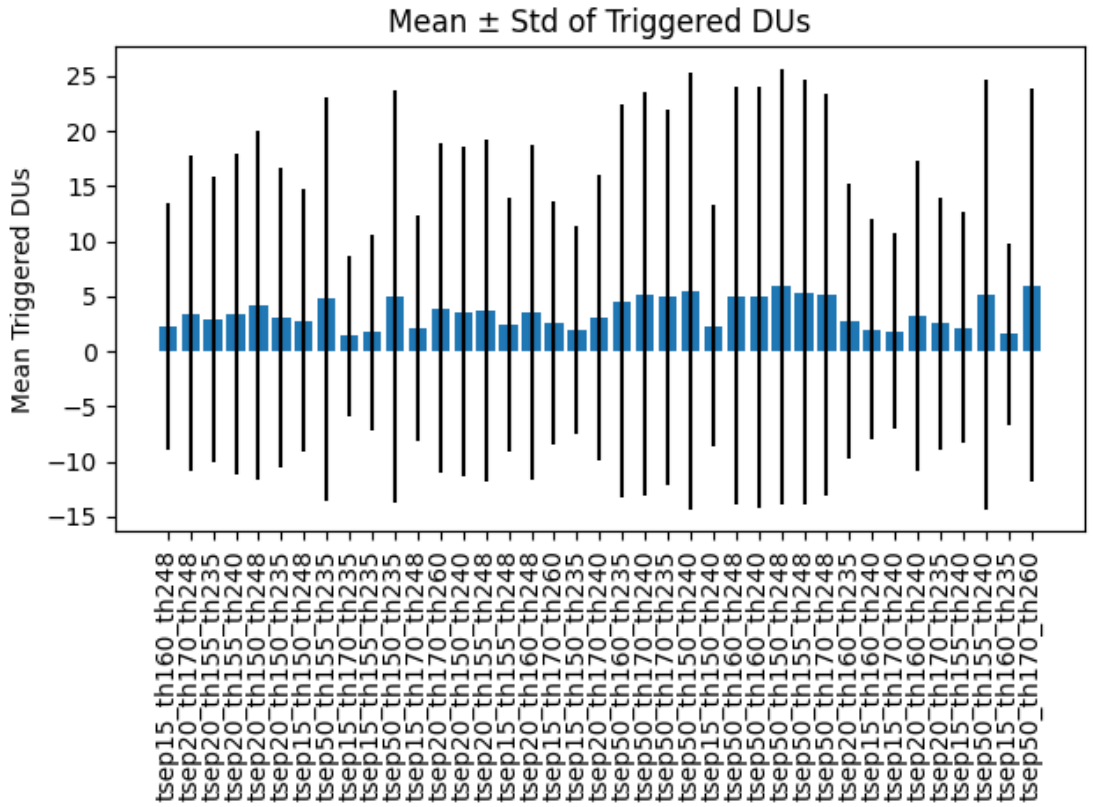
Trigger Efficiency / Tsep

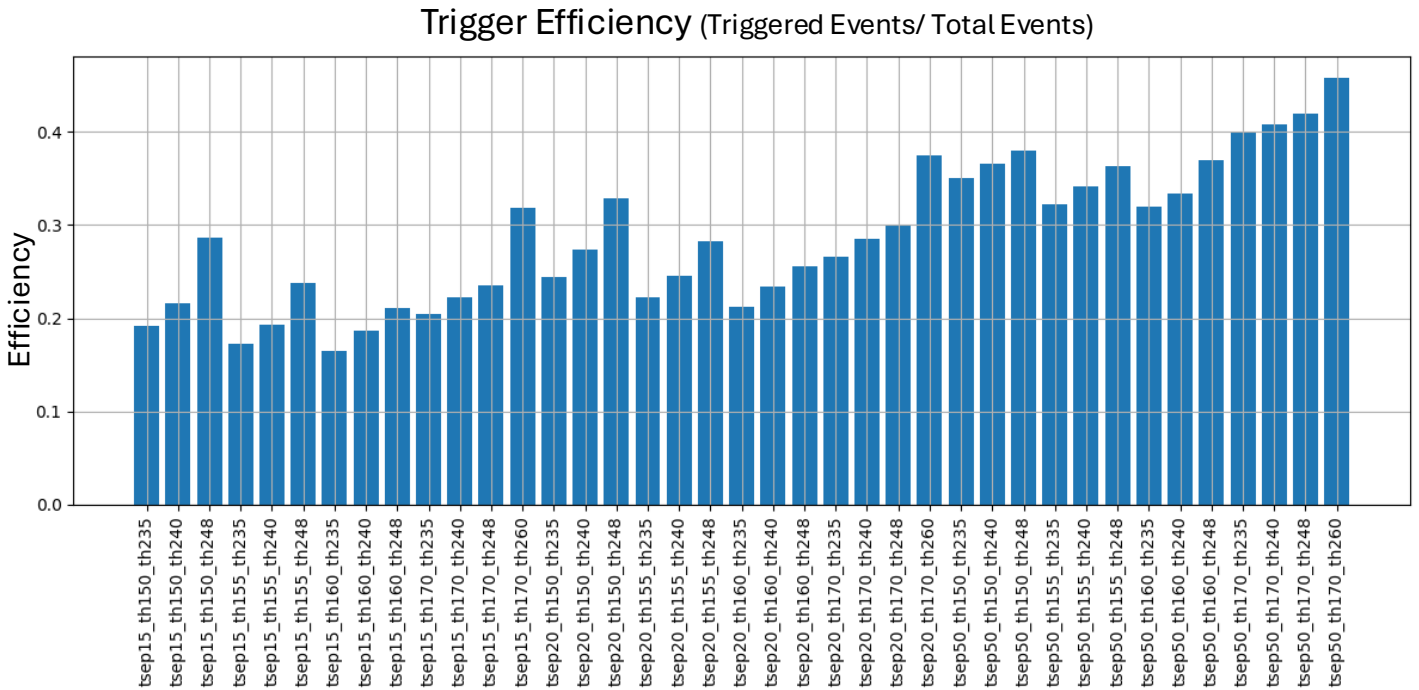




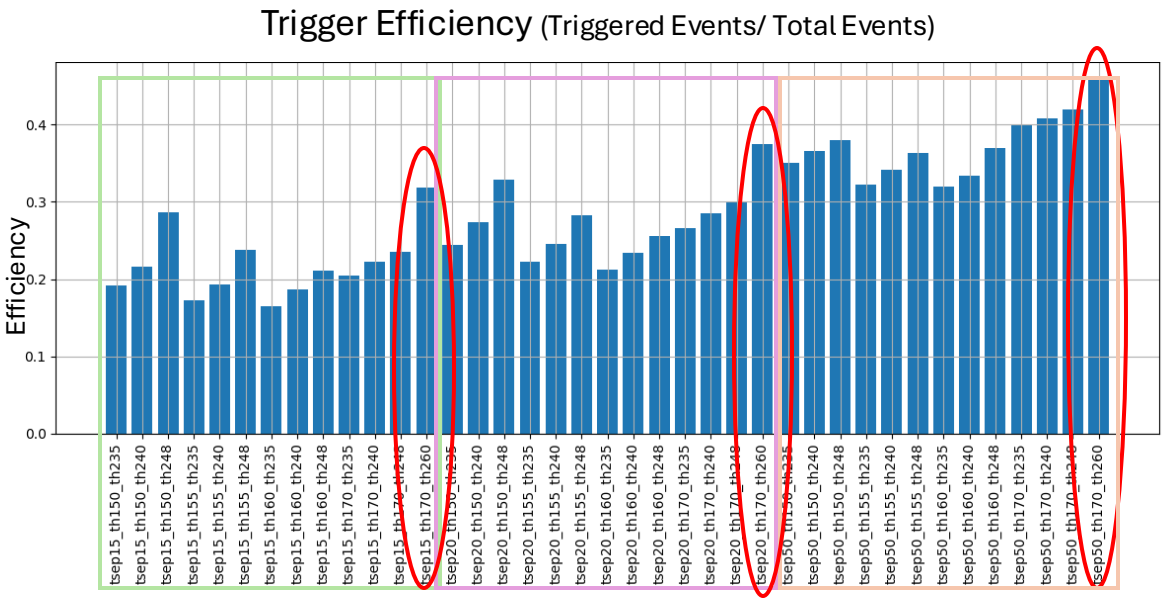
Triggered DUs

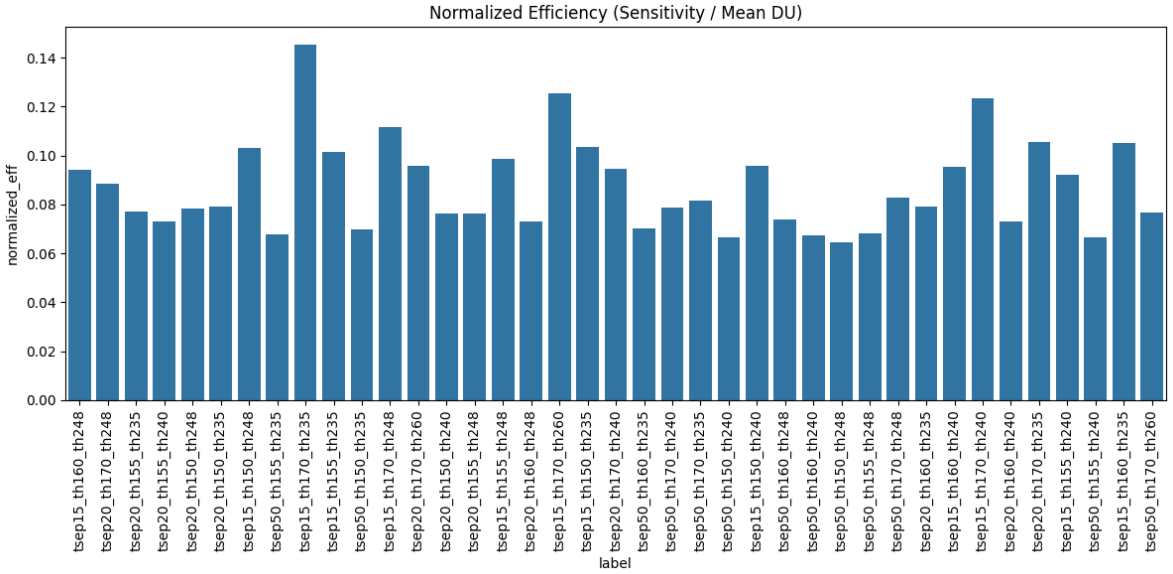
Dataset : /sps/grand/DC2.1rc2



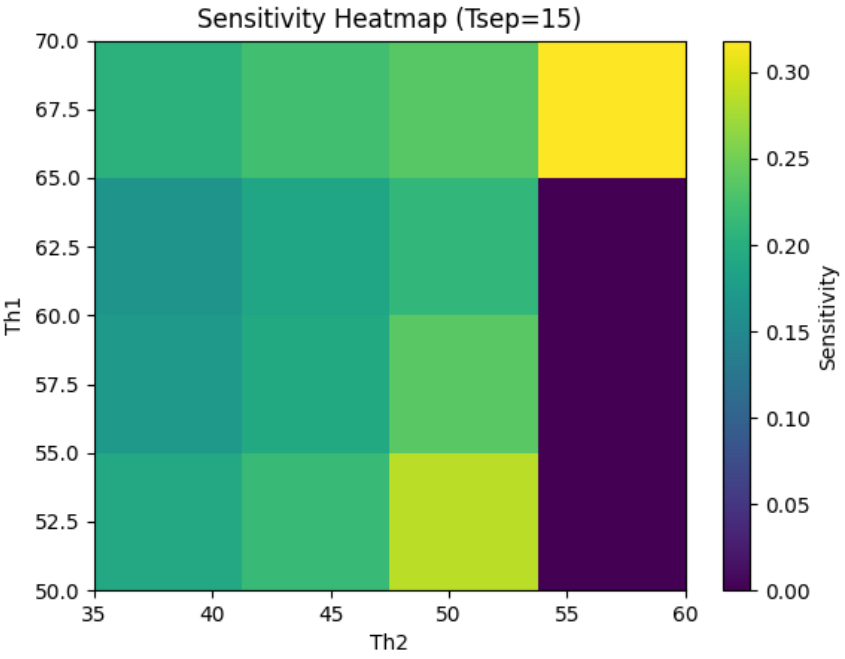


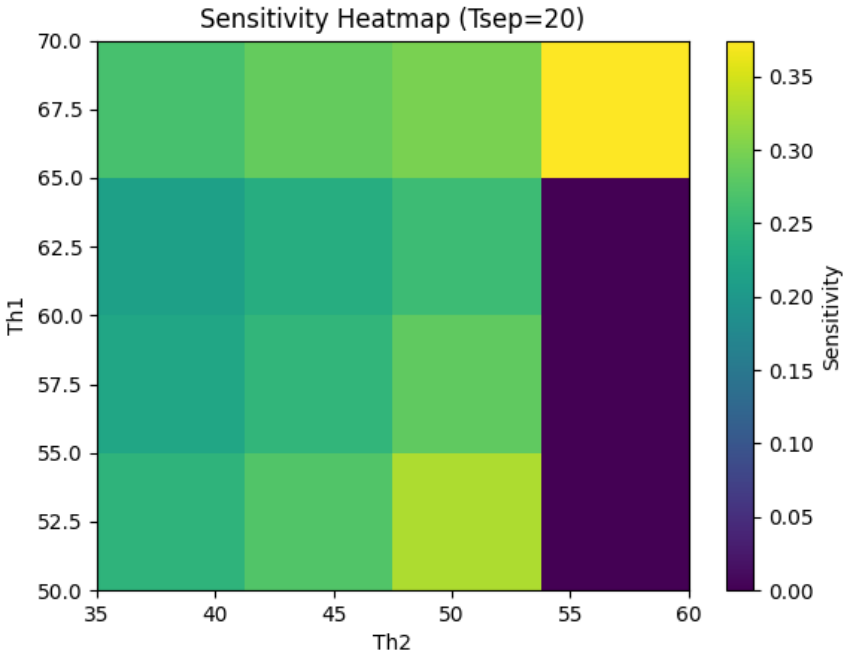
Trigger Efficiency

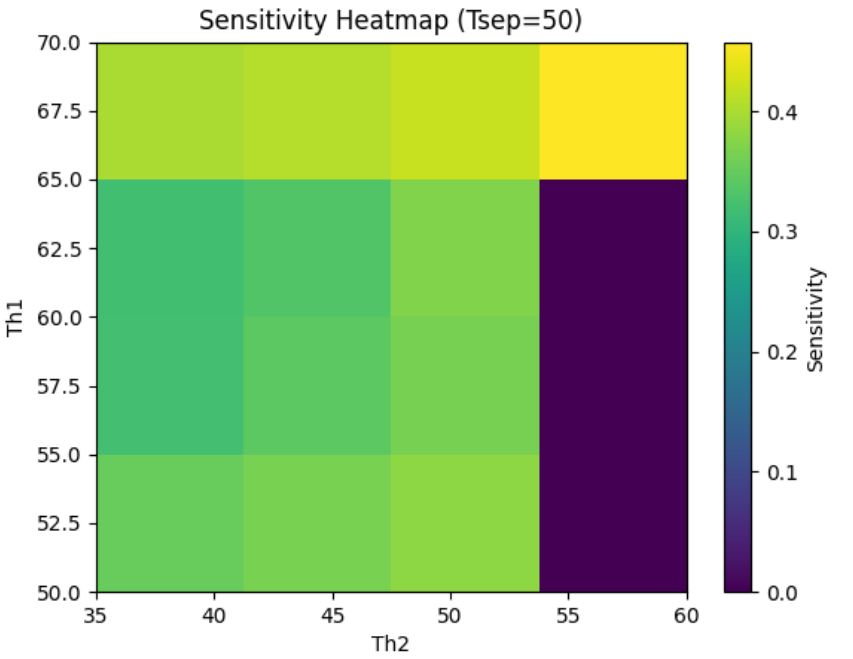




Trigger Efficiency



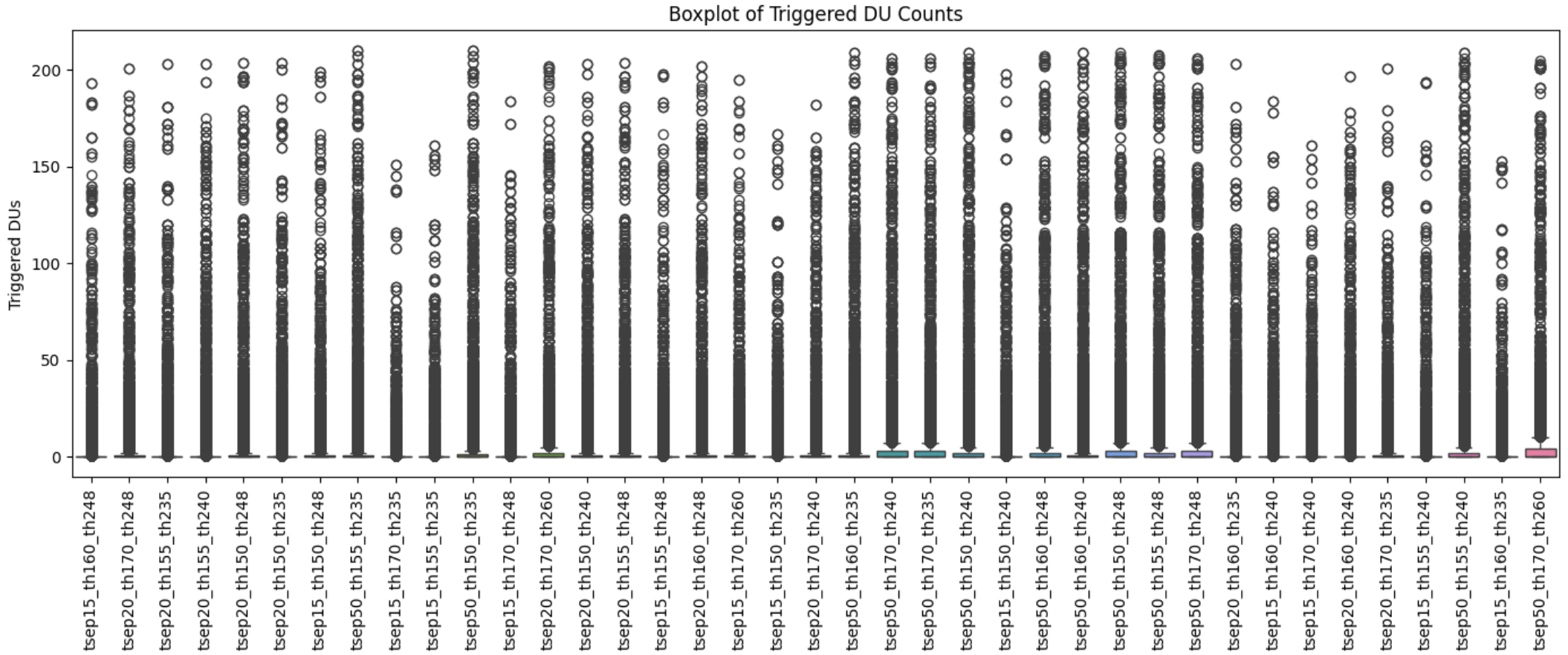




Next Steps

- Further examine parameter correlations to identify pairs of variables with strong relationships or redundancy.
- Conduct a comprehensive parameter sweep using a larger and more diverse dataset to enhance statistical significance.
- Validate the results against DC2 data to ensure consistency and accuracy of the findings.
- Determine the optimal parameter set based on the specific goals and constraints of the analysis.

BACK UP


Boxplot of Triggered DU Counts
Triggered DUs
0
50
100
150
200
tsep15_th160_th248
tsep20_th170_th248
tsep20_th155_th235
tsep20_th155_th240
tsep20_th150_th248
tsep20_th150_th235
tsep15_th150_th248
tsep50_th155_th235
tsep15_th170_th235
tsep15_th155_th235
tsep50_th150_th235
tsep15_th170_th248
tsep20_th170_th260
tsep20_th150_th240
tsep20_th155_th248
tsep15_th155_th248
tsep20_th160_th248
tsep15_th170_th260
tsep15_th150_th235
tsep20_th170_th240
tsep50_th160_th235
tsep50_th170_th240
tsep50_th170_th235
tsep50_th150_th240
tsep15_th150_th240
tsep50_th160_th248
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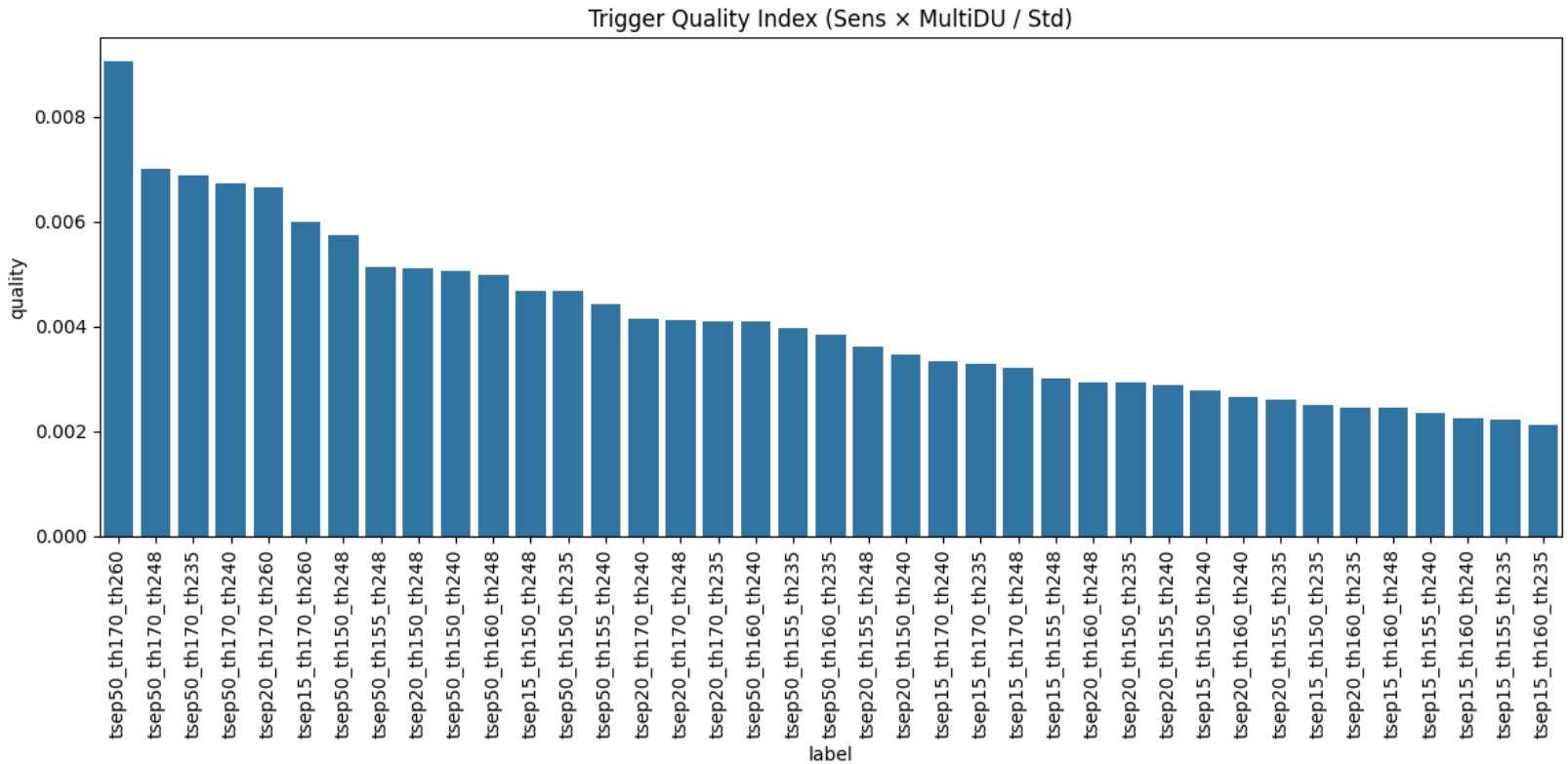
tsep50_th150_th248
tsep50_th155_th248
tsep50_th170_th248
tsep20_th160_th235
tsep15_th160_th240
tsep15_th170_th240
tsep20_th160_th240
tsep20_th170_th235
tsep15_th155_th240
tsep50_th155_th240
tsep15_th160_th235
tsep50_th170_th260


Trigger Quality Index (Sens × MultiDU / Std)
quality
0.000
0.002
0.004
0.006
0.008
label
tsep50_th170_th260
tsep50_th170_th248
tsep50_th170_th235
tsep50_th170_th240
tsep20_th170_th260
tsep15_th170_th260
tsep50_th150_th248
tsep50_th155_th248
tsep20_th150_th248
tsep50_th150_th240
tsep50_th160_th248
tsep15_th150_th248
tsep50_th150_th235
tsep50_th155_th240
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tsep15_th150_th235
tsep20_th160_th235
tsep15_th160_th248
tsep15_th155_th240
tsep15_th160_th240
tsep15_th155_th235
tsep15_th160_th235

Multi-DU trigger