

KS Test Results

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MSU Group meeting

Criteria for choosing the correct amount of downselecting

- First and foremost want the downselecting factor that gives a p-value closest to (or equal to) 1
- Secondly want the KS statistic to be as small as possible
- Must keep in mind for larger factors the amount of data available

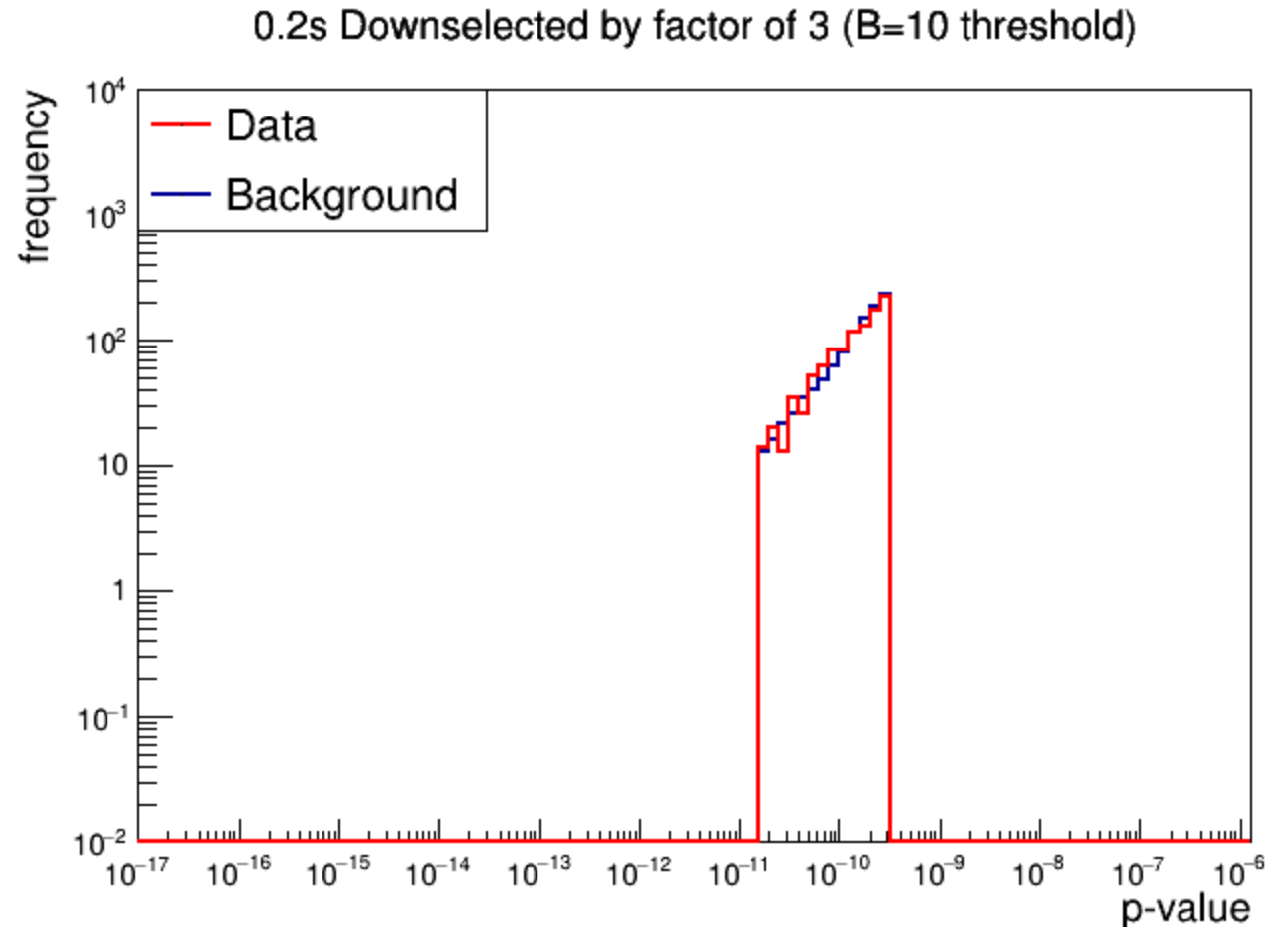
D = 0.2s KS Test Results

	Events in H _{data}	Events in H _{bkg}	KS Statistic	p-Value
DS = 1	4,091	4,013	0.1579	0.9563
DS = 2	2,049	2,033	0.1333	0.9983
DS = 3	1,020	1,018	0.1667	0.9913
DS = 4	477	491	0.1	1
DS = 5	208	197	0.3333	0.8096
DS = 6	58	64	0.3333	0.9762
DS = 7	32	48	0.5	0.8438

*events passing B=10 threshold cuts

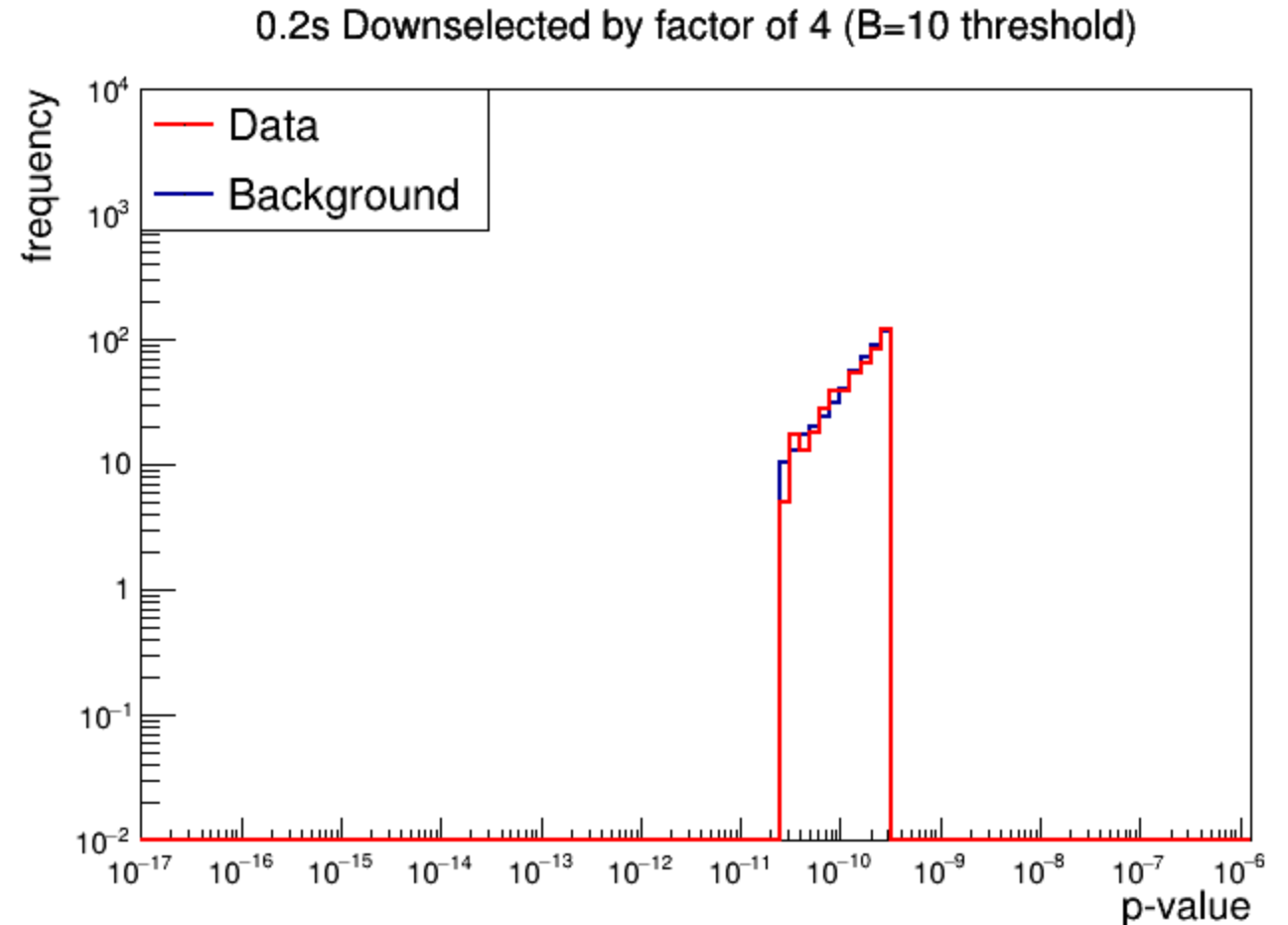
0.2s Downselected by 3 (B=10 threshold)

- 1020 events in H_data
- 1018 events in H_bkg
- KS test
 - Statistic = 0.1667
 - Pvalue = 0.9913



0.2s Downselected by 4 (B=10 threshold)

- 477 events in H_data
- 491 events in H_bkg
- KS test
 - Statistic = 0.1
 - Pvalue = 1



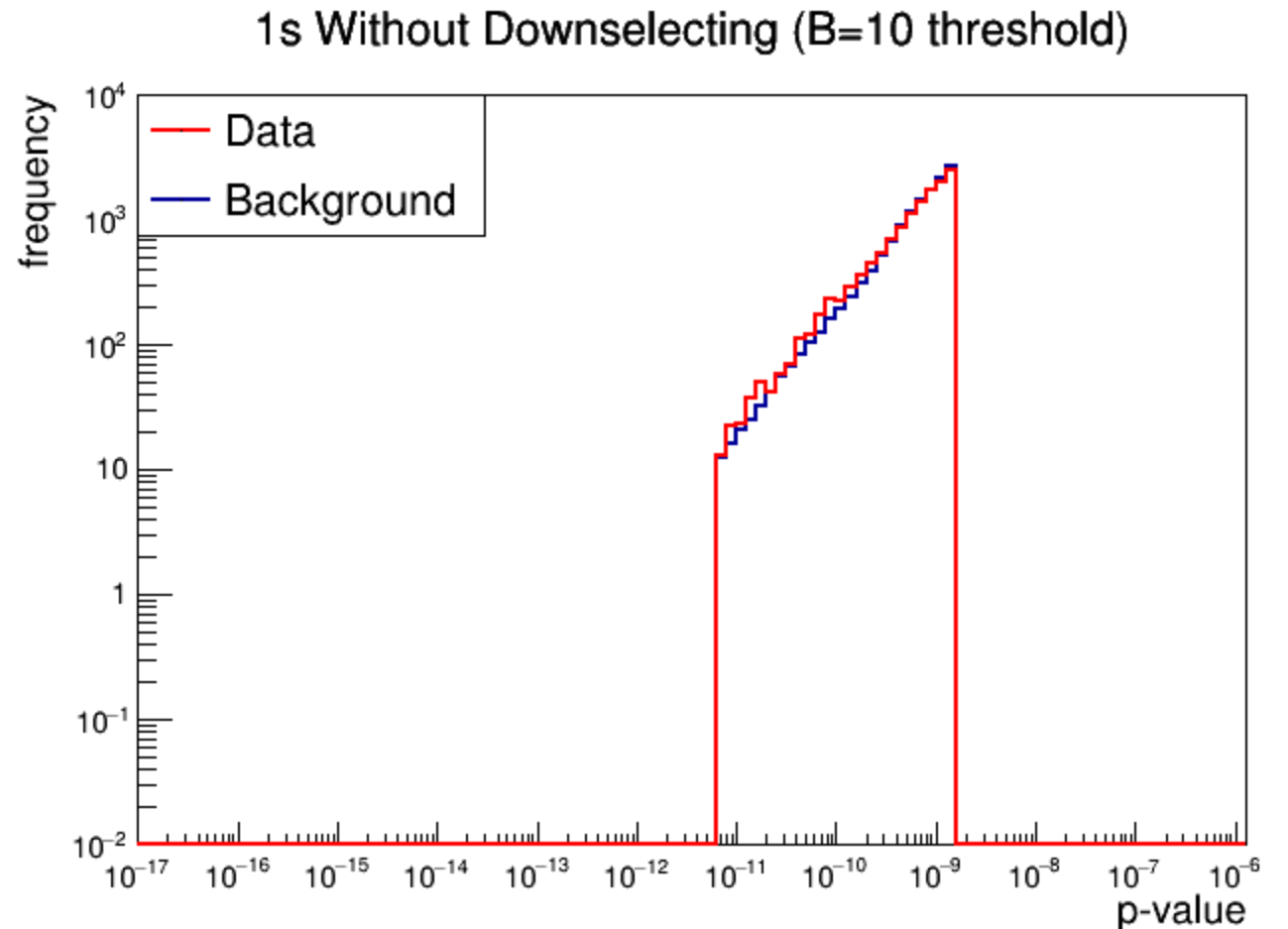
D = 1s KS Test Results

	Events in H _{data}	Events in H _{bkg}	KS Statistic	p-Value
DS = 1	13,090	13,036	0.0833	0.9999
DS = 2	5,992	5,996	0.1	0.9999
DS = 3	2,631	2,649	0.0588	1
DS = 4	1,111	1,133	0.0769	1
DS = 5	504	406	0.3333	0.6030
DS = 6	185	189	0.1667	0.9999
DS = 7	80	85	0.5	0.5344

*events passing B=10 threshold cuts

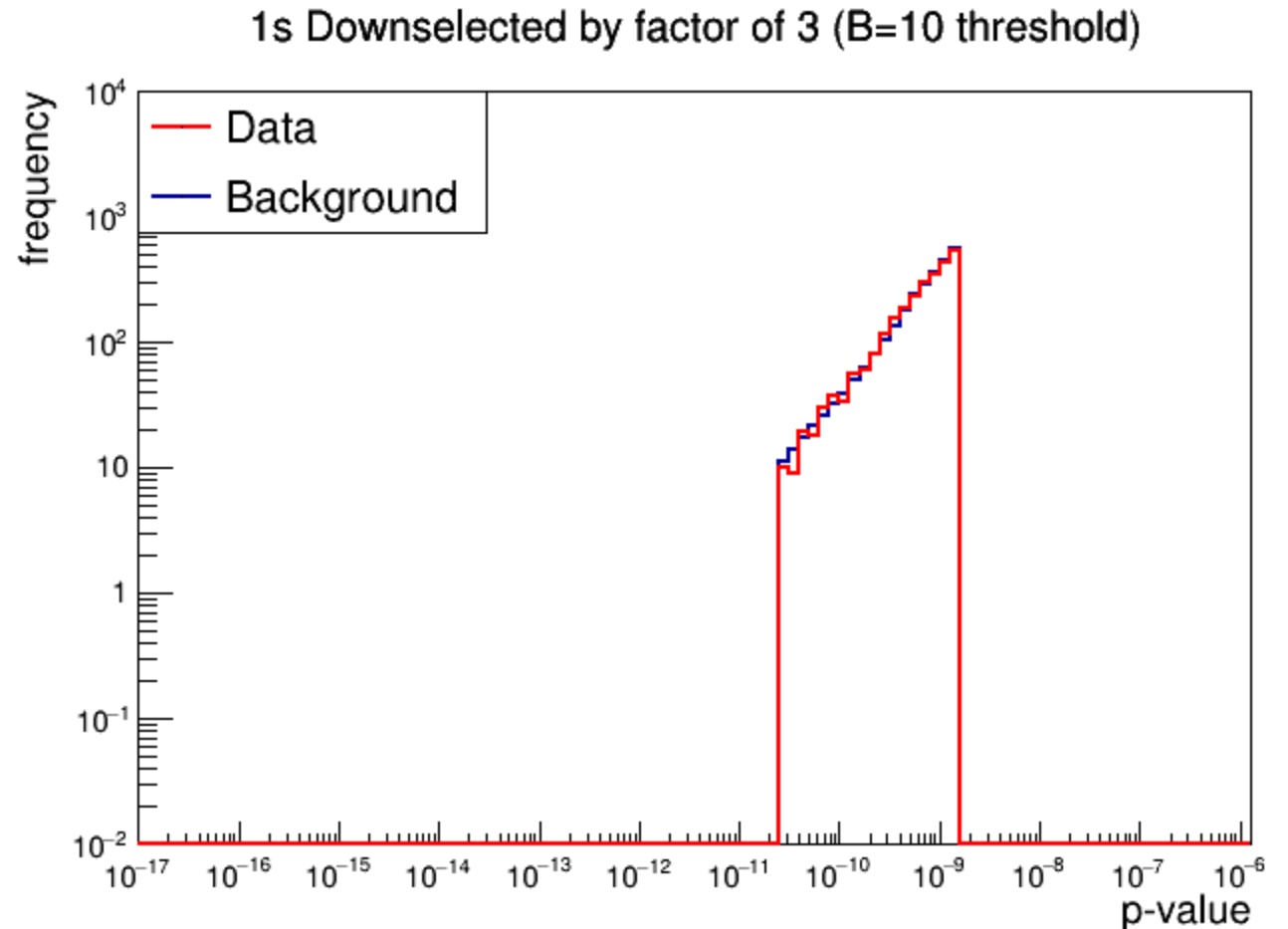
1s no downselecting (B=10 threshold)

- 13090 events in H_data
- 13036 events in H_bkg
- KS test
 - Statistic = 0.0833
 - Pvalue = 0.9999



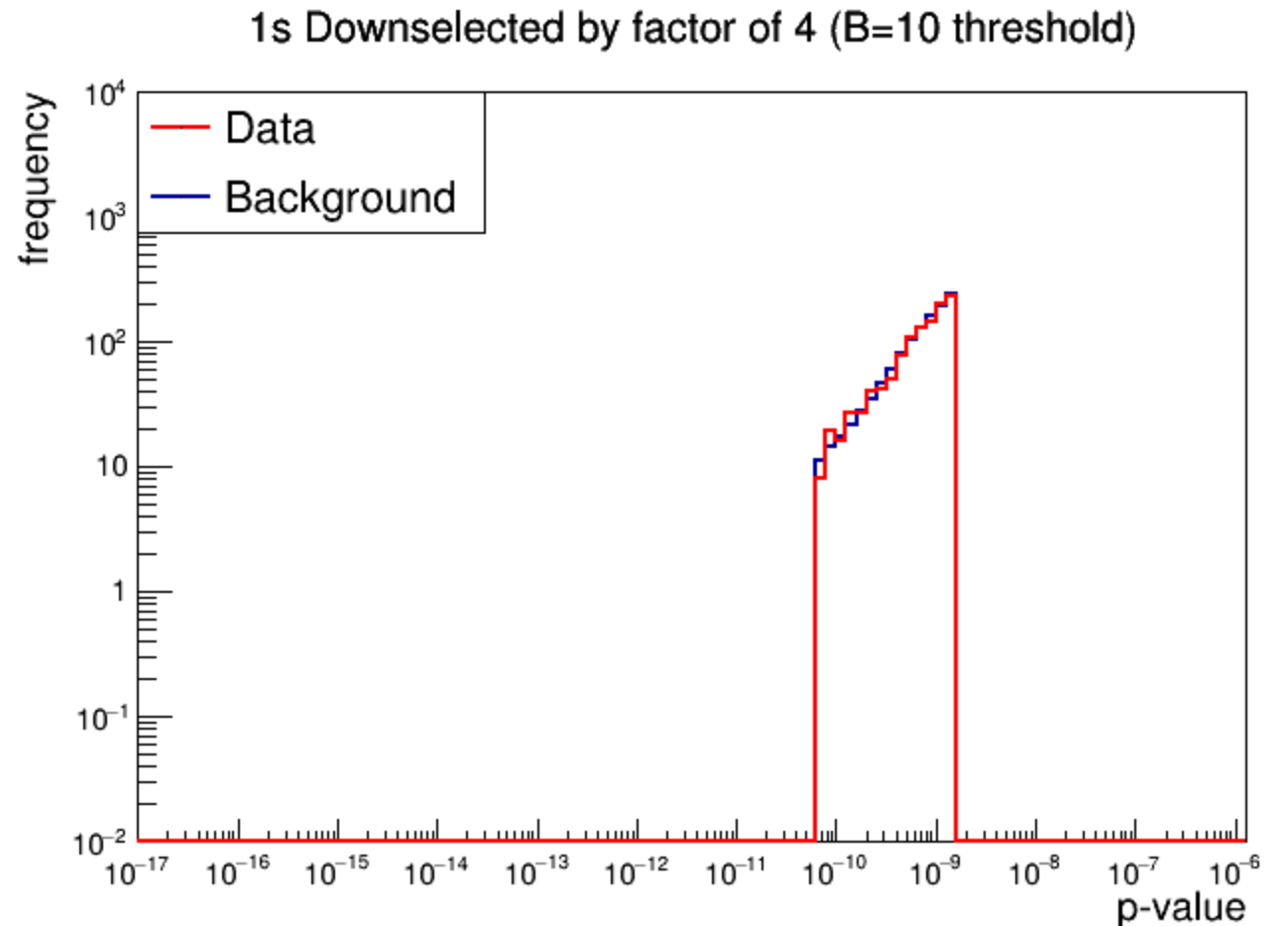
1s Downselected by 3 (B=10 threshold)

- 2631 events in H_data
- 2649 events in H_bkg
- KS test
 - Statistic = 0.0588
 - Pvalue = 1



1s Downselected by 4 (B=10 threshold)

- 1111 events in H_data
- 1133 events in H_bkg
- KS test
 - Statistic = 0.0769
 - Pvalue = 1



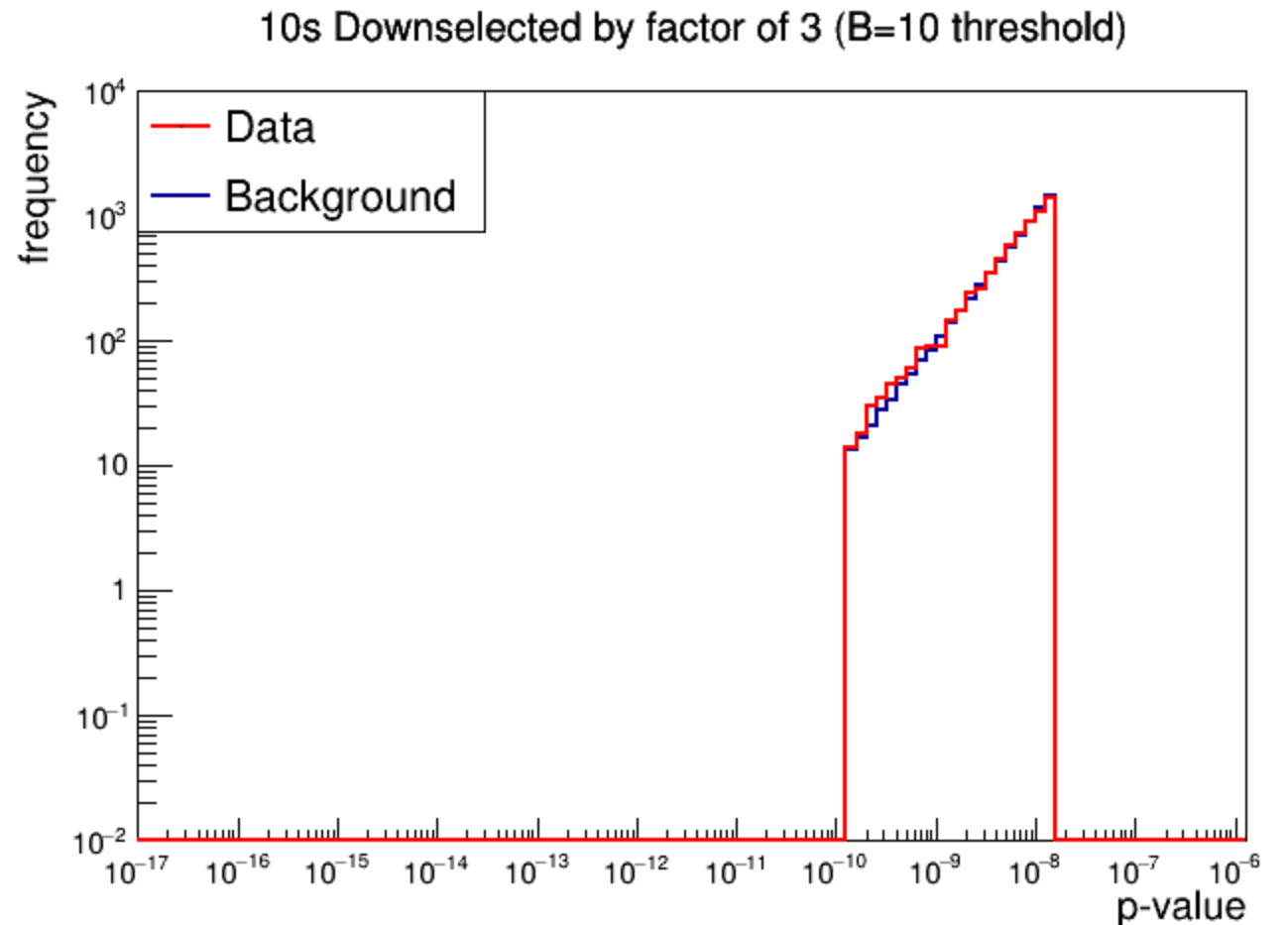
D = 10s KS Test Results

	Events in H_{data}	Events in H_{bkg}	KS Statistic	p-Value
DS = 1	47,759	47,217	0.1034	0.9961
DS = 2	17,328	17,203	0.12	0.9896
DS = 3	6,772	6,770	0.0952	0.9999
DS = 4	2,960	2,964	0.1176	0.9994
DS = 5	1,368	1,389	0.1429	0.9971
DS = 6	563	574	0.1	1
DS = 7	242	329	0.25	0.9290

*events passing B=10 threshold cuts

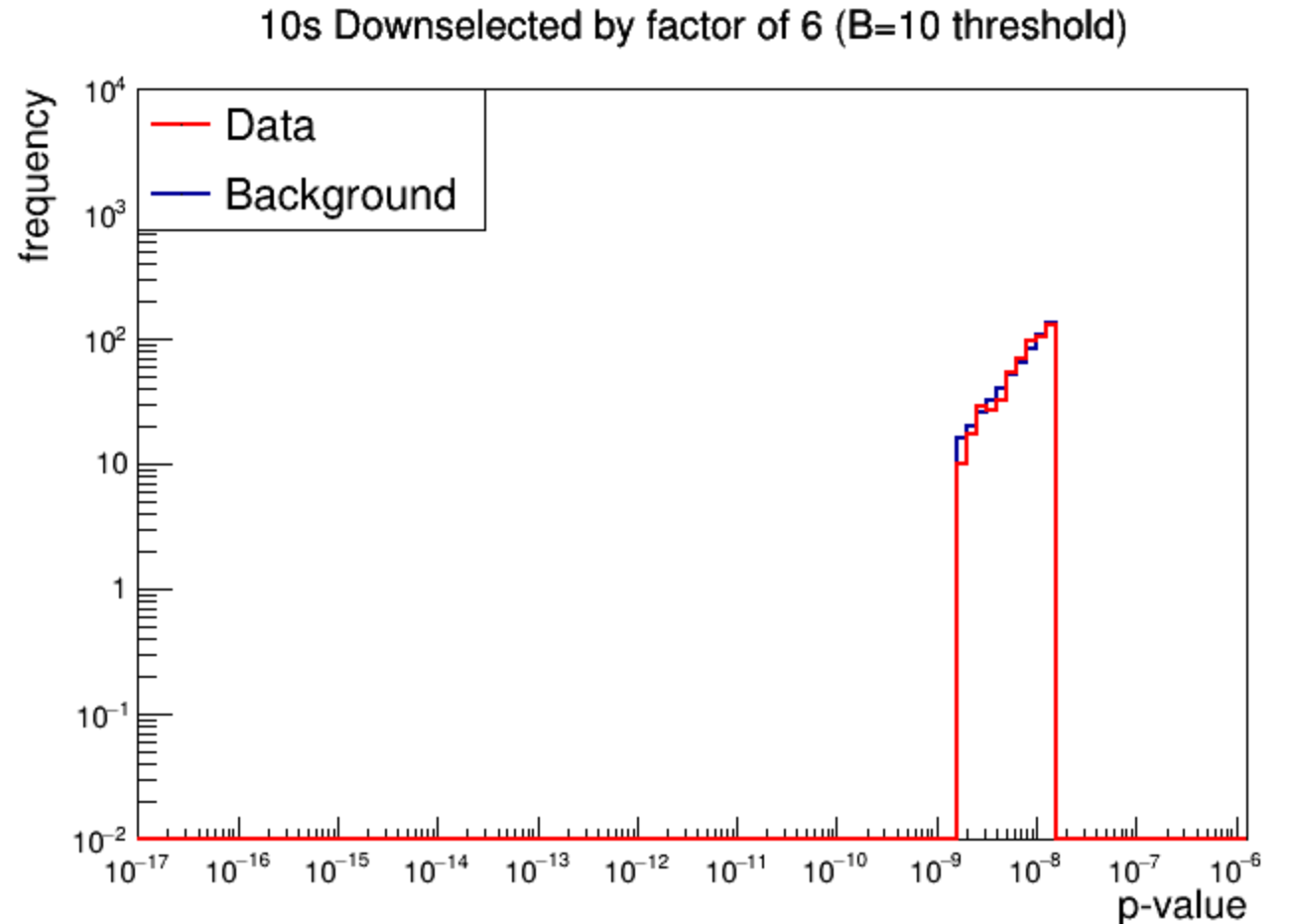
10s Downselected by 3 (B=10 threshold)

- 6772 events in H_data
- 6770 events in H_bkg
- KS test
 - Statistic = 0.0952
 - Pvalue = 0.9999



10s Downselected by 6 (B=10 threshold)

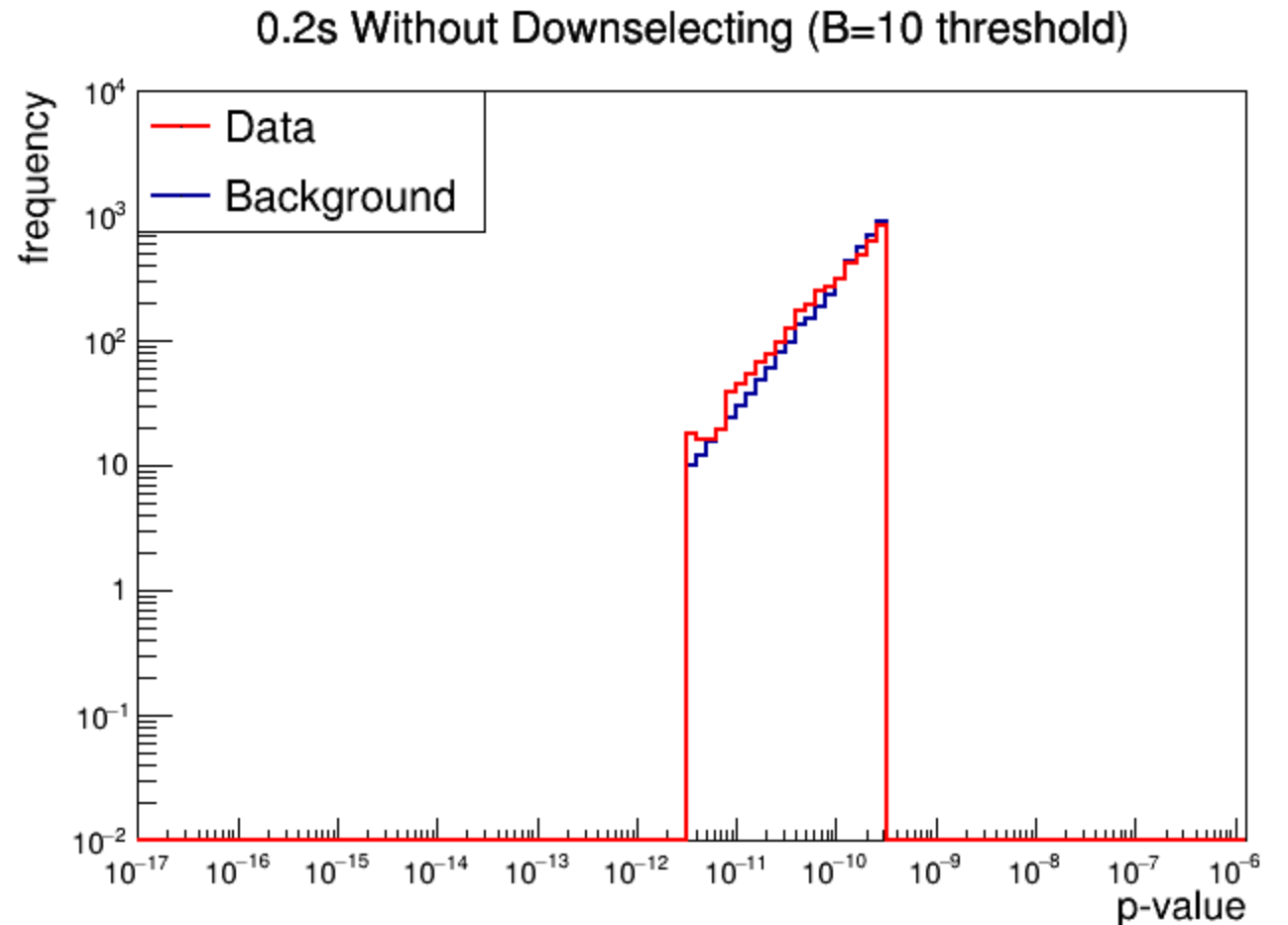
- 563 events in H_data
- 574 events in H_bkg
- KS test
 - Statistic = 0.1
 - Pvalue = 1



Backup

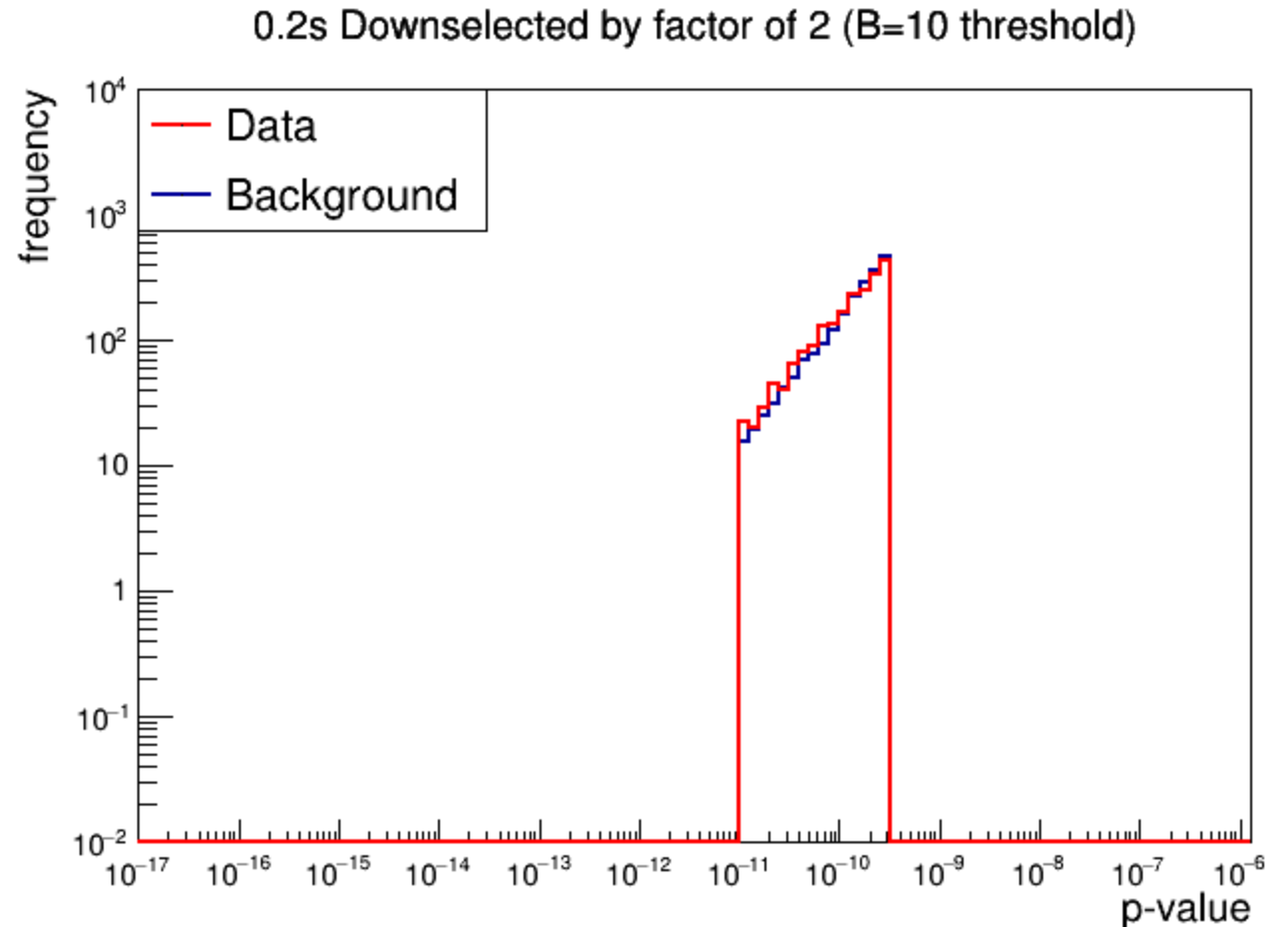
0.2s no downselecting (B=10 threshold)

- 4091 events in H_data
- 4013 events in H_bkg
- KS test
 - Statistic = 0.1579
 - Pvalue = 0.9563



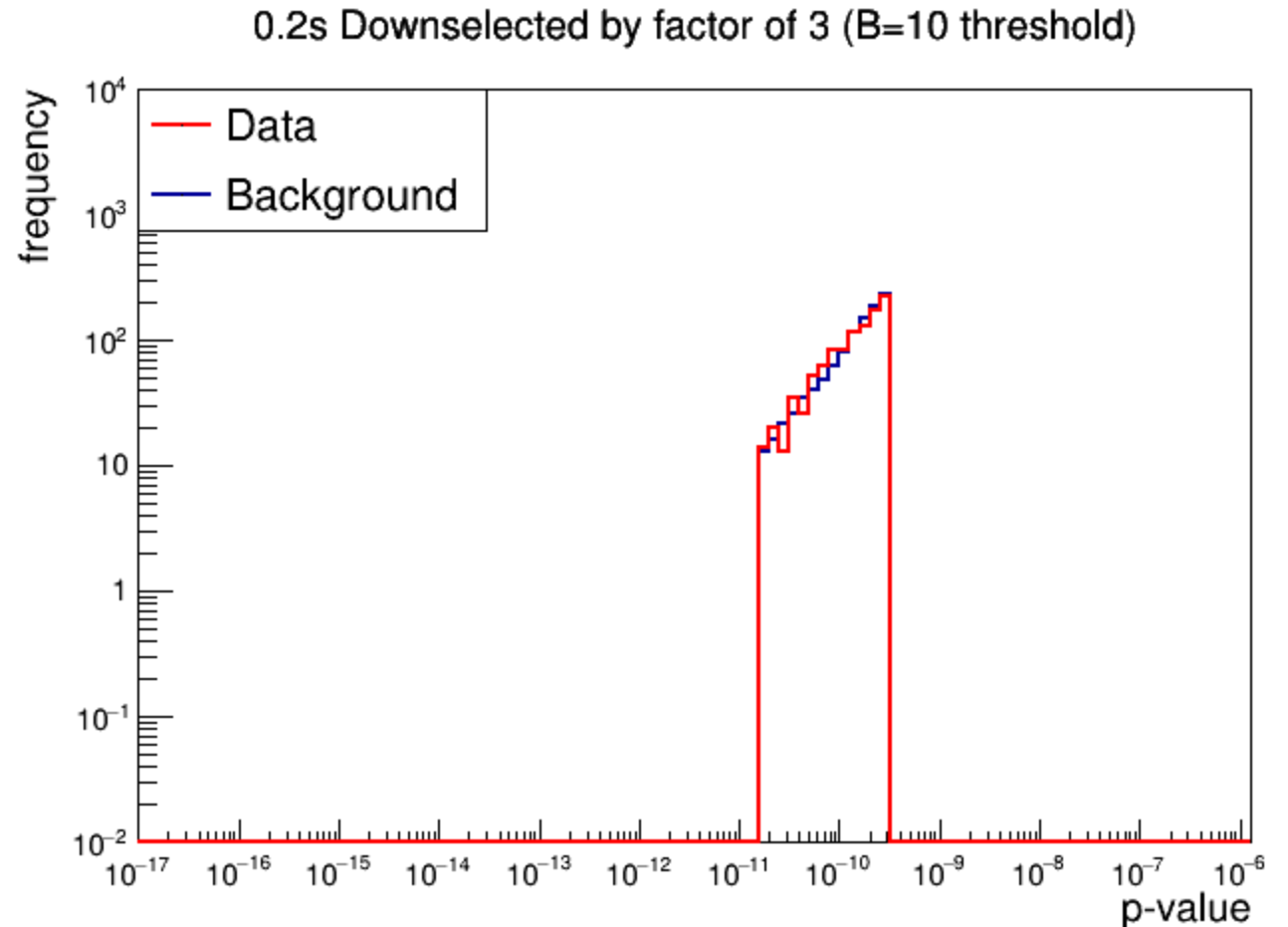
0.2s downselected by 2 (B=10 threshold)

- 2049 events in H_data
- 2033 events in H_bkg
- KS test
 - Statistic = 0.1333
 - Pvalue = 0.9983



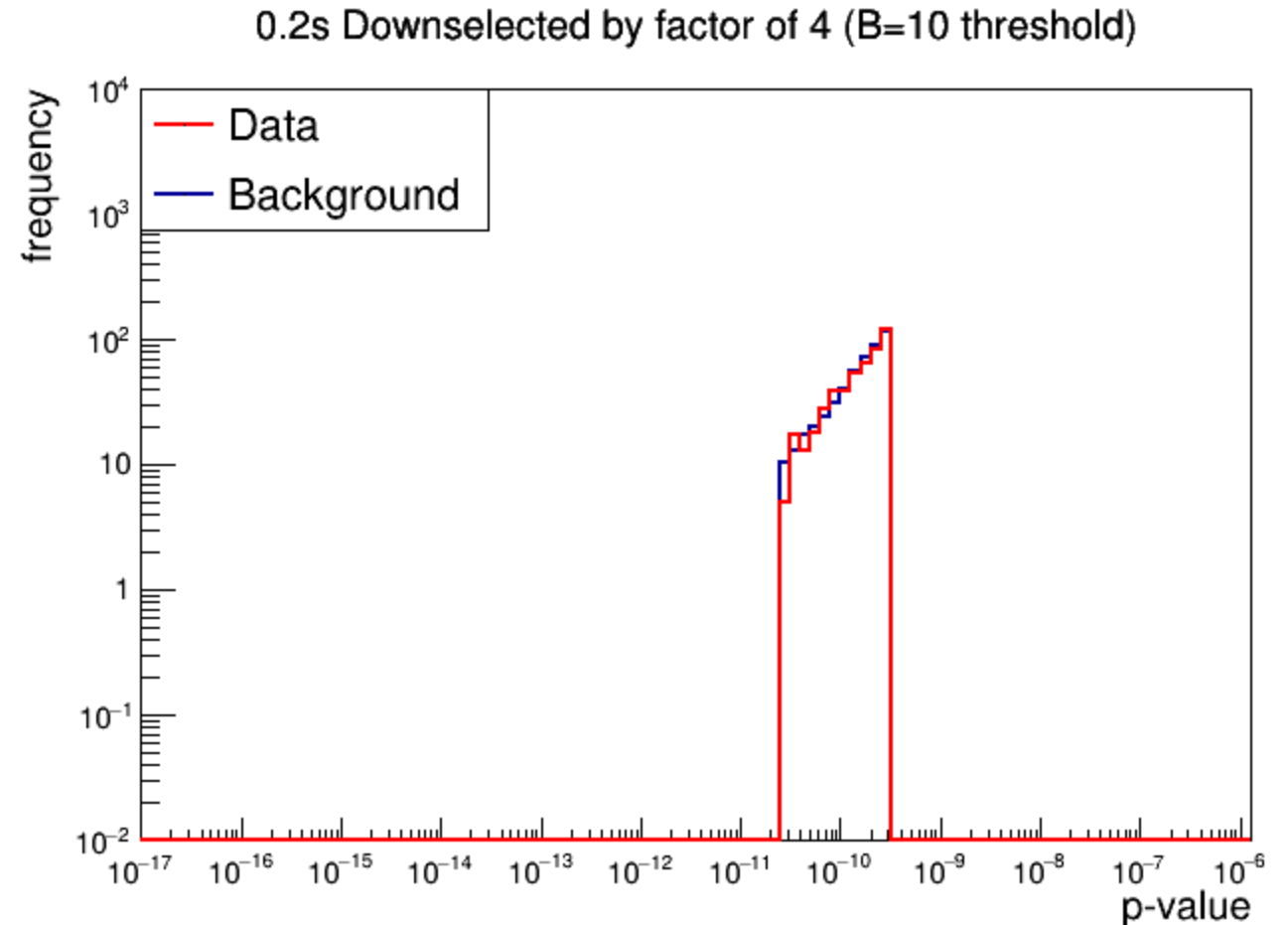
0.2s Downselected by 3 (B=10 threshold)

- 1020 events in H_data
- 1018 events in H_bkg
- KS test
 - Statistic = 0.1667
 - Pvalue = 0.9913



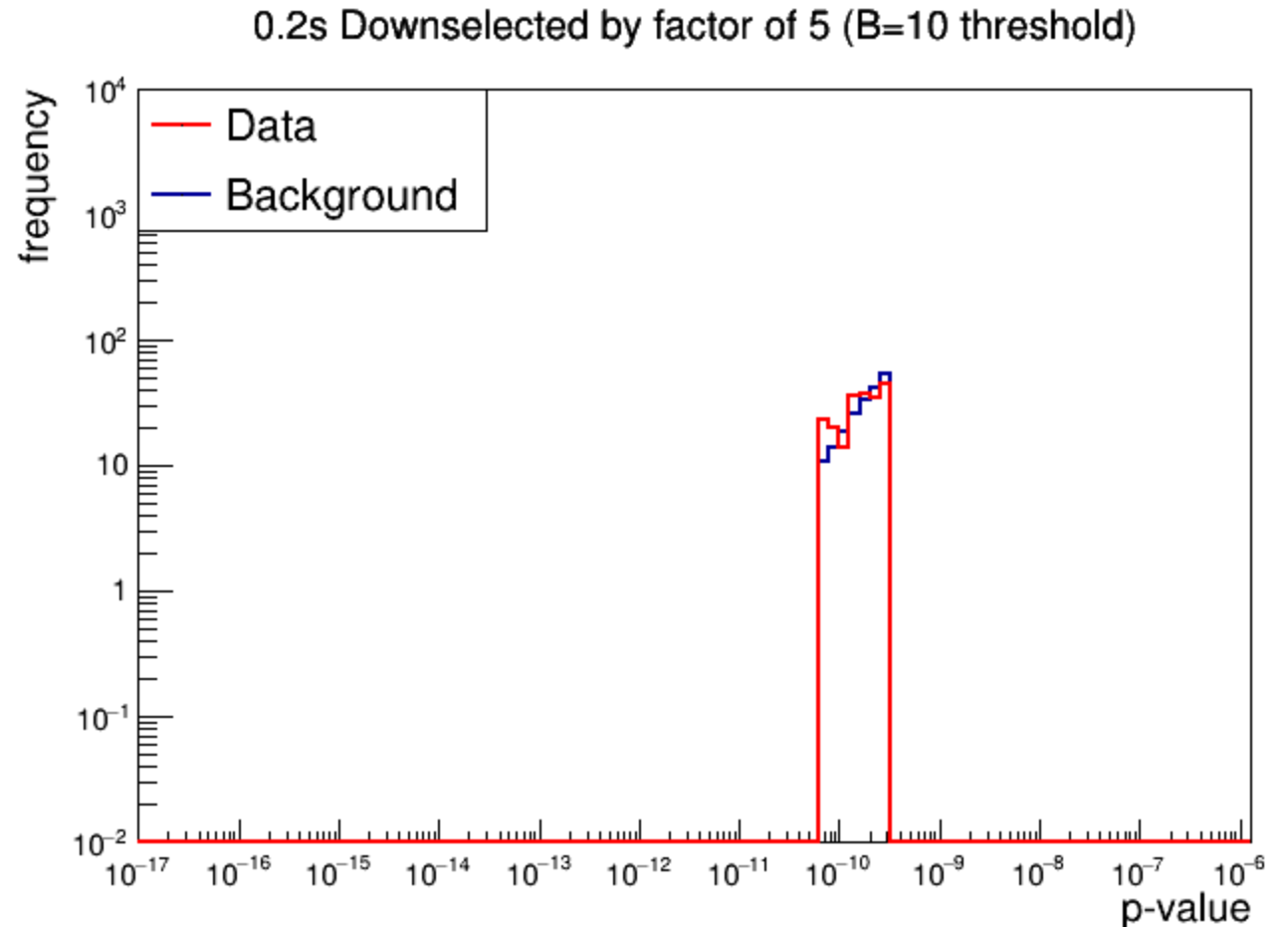
0.2s Downselected by 4 (B=10 threshold)

- 477 events in H_data
- 491 events in H_bkg
- KS test
 - Statistic = 0.1
 - Pvalue = 1



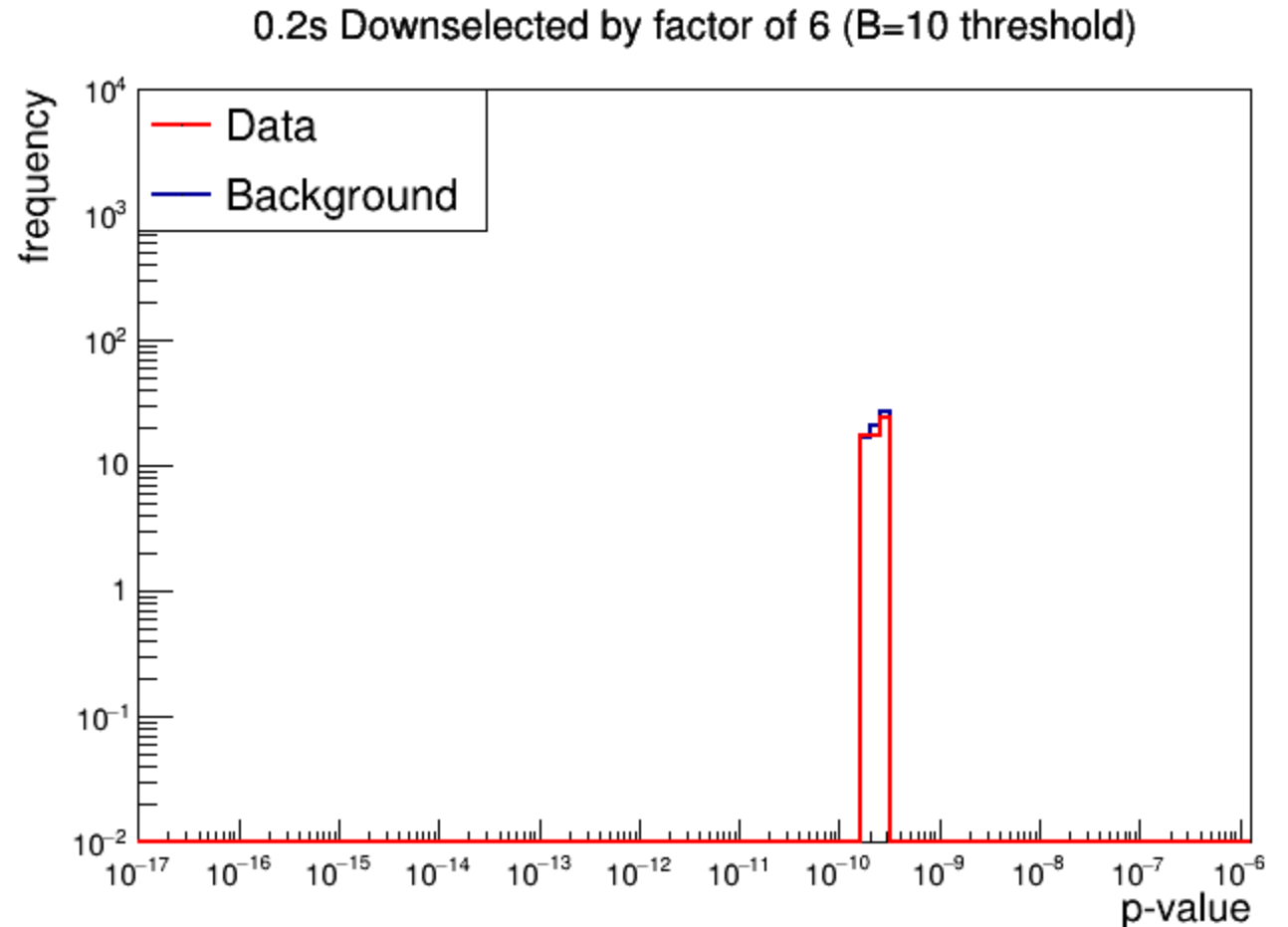
0.2s Downselected by 5 (B=10 threshold)

- 208 events in H_data
- 197 events in H_bkg
- KS test
 - Statistic = 0.3333
 - Pvalue = 0.8096



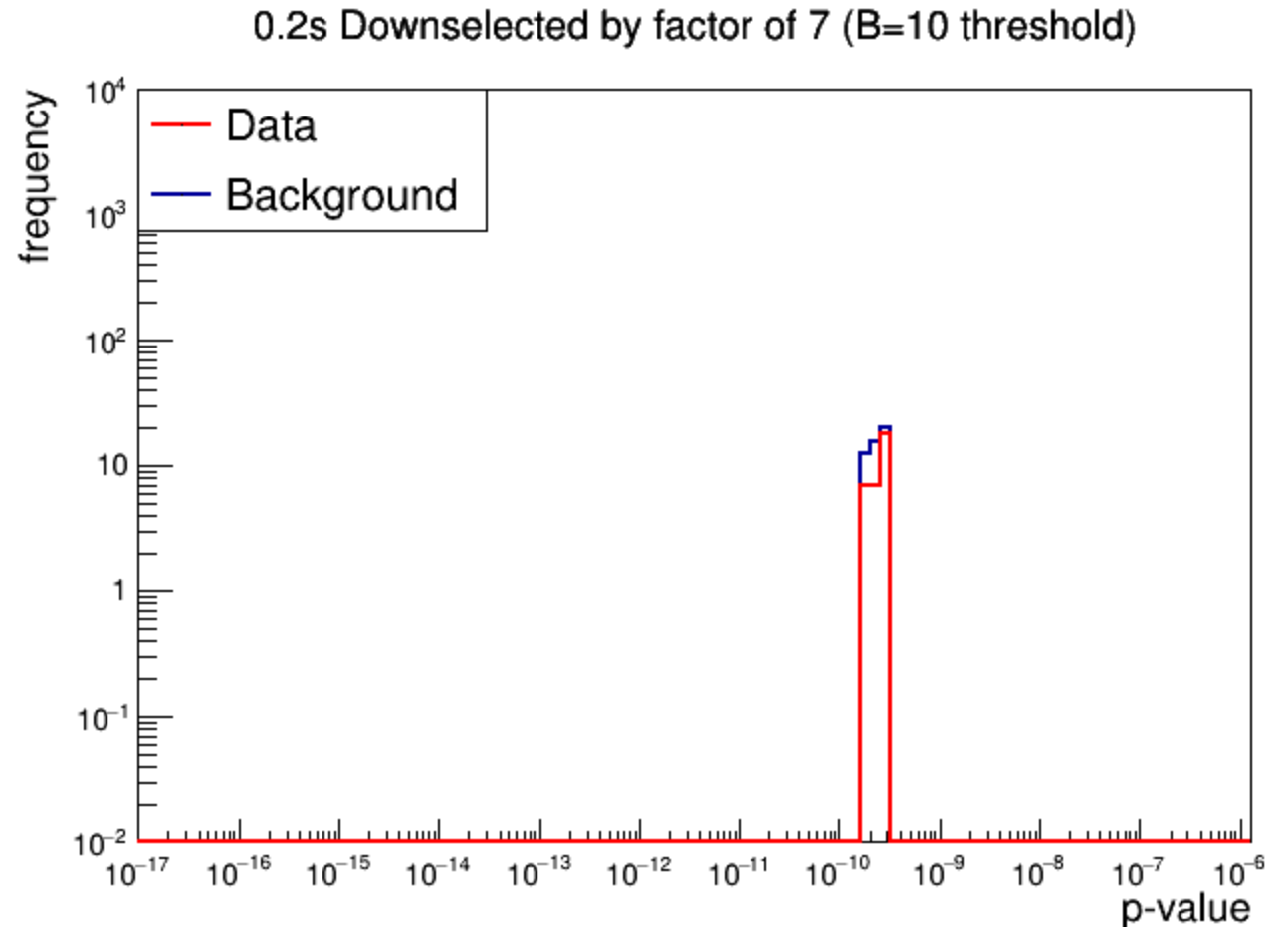
0.2s Downselected by 6 (B=10 threshold)

- 58 events in H_data
- 64 events in H_bkg
- KS test
 - Statistic = 0.3333
 - Pvalue = 0.9762



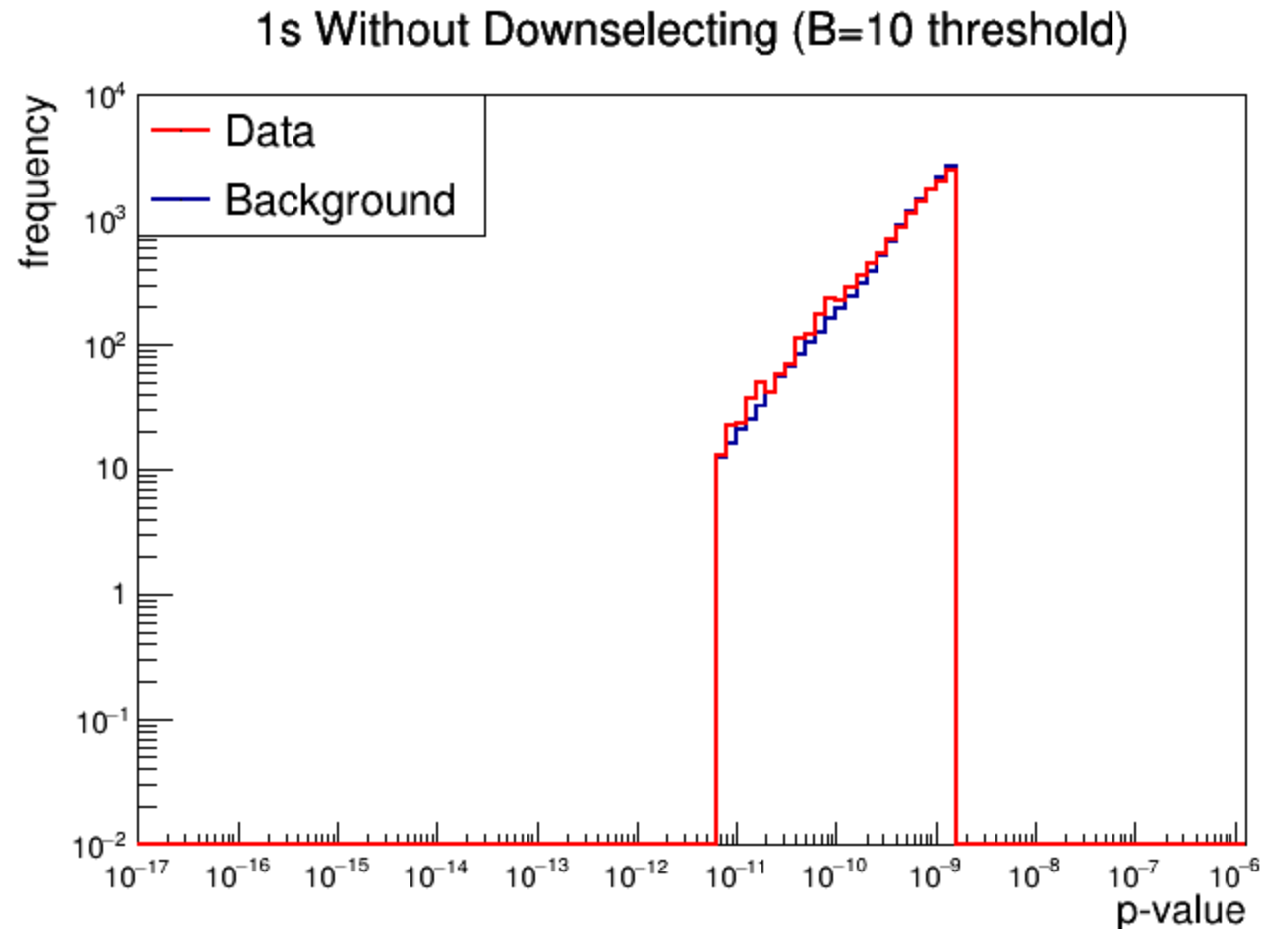
0.2s Downselected by 7 (B=10 threshold)

- 32 events in H_data
- 48 events in H_bkg
- KS test
 - Statistic = 0.5
 - Pvalue = 0.8438



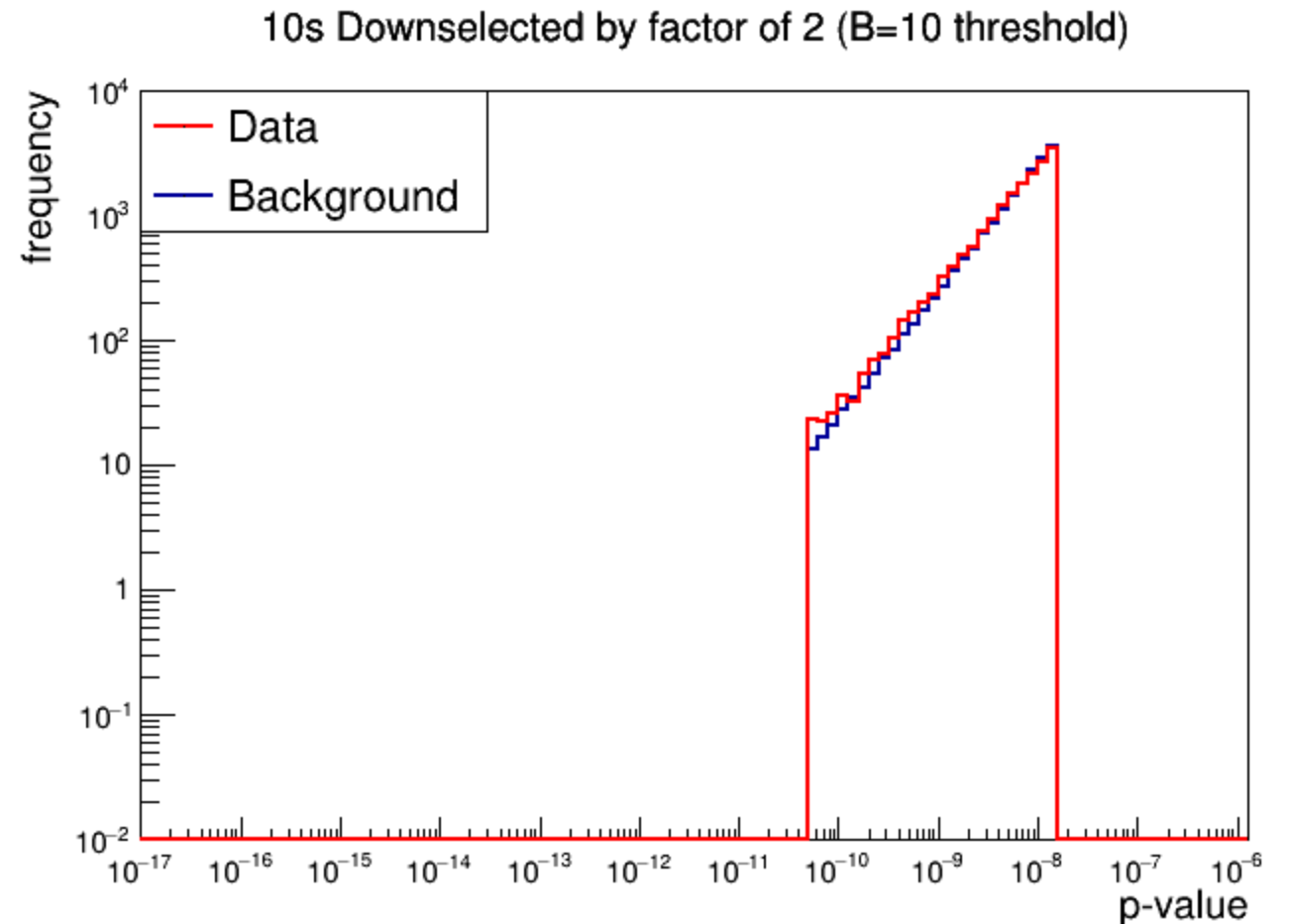
1s no downselecting (B=10 threshold)

- 13090 events in H_data
- 13036 events in H_bkg
- KS test
 - Statistic = 0.0833
 - Pvalue = 0.9999



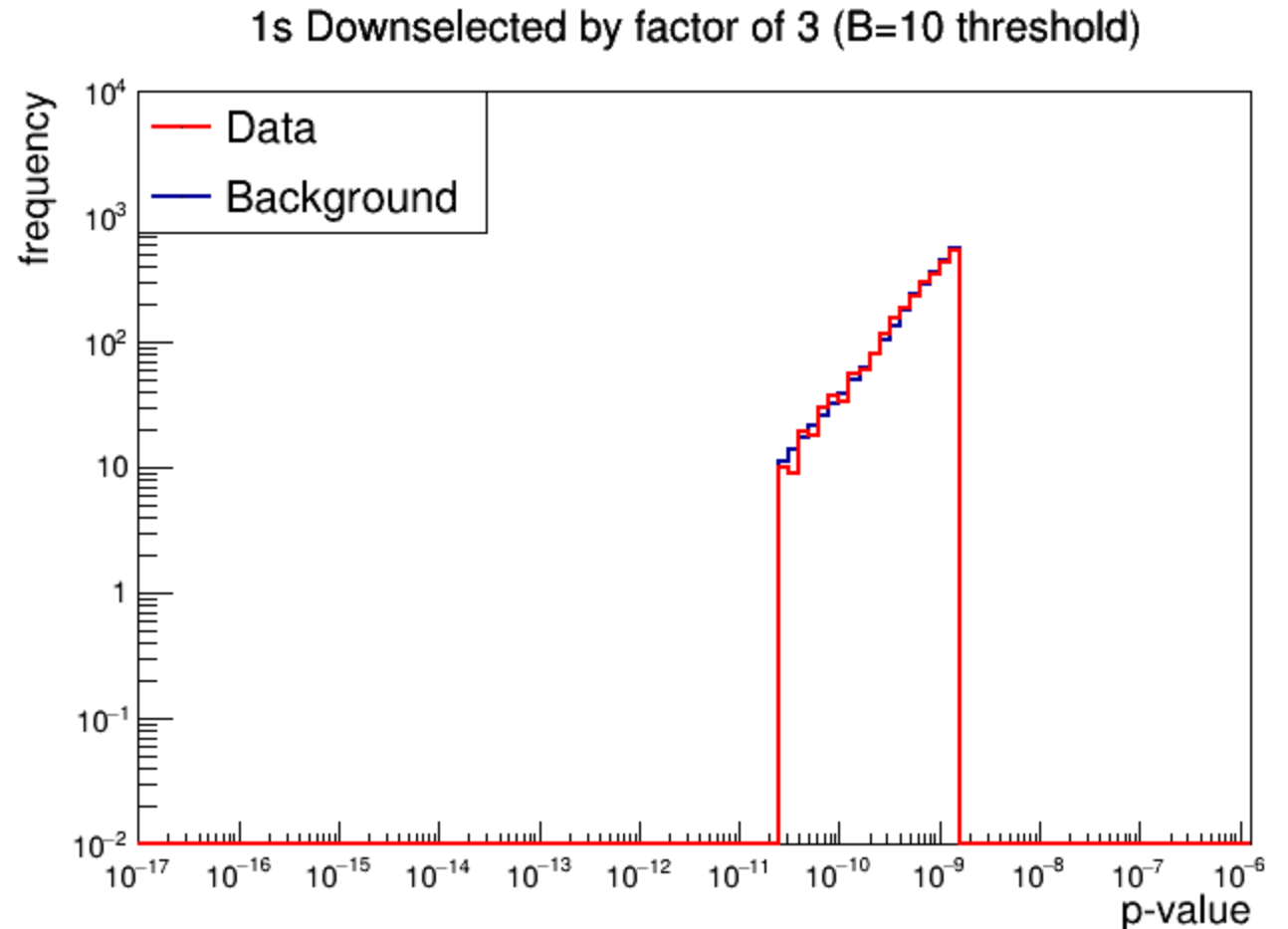
1s downselected by 2 (B=10 threshold)

- 5992 events in H_data
- 5996 events in H_bkg
- KS test
 - Statistic = 0.1
 - Pvalue = 0.9999



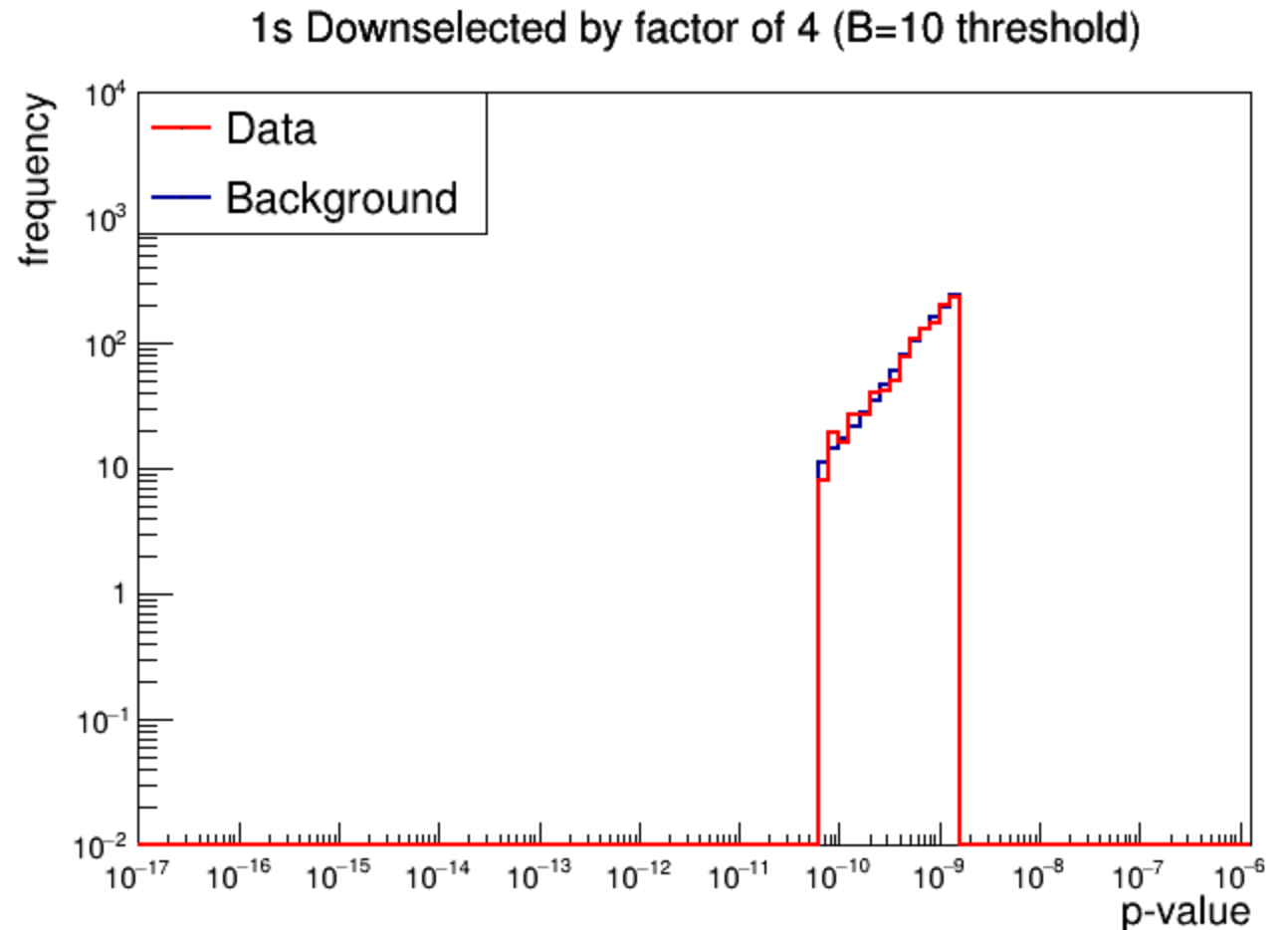
1s Downselected by 3 (B=10 threshold)

- 2631 events in H_data
- 2649 events in H_bkg
- KS test
 - Statistic = 0.0588
 - Pvalue = 1



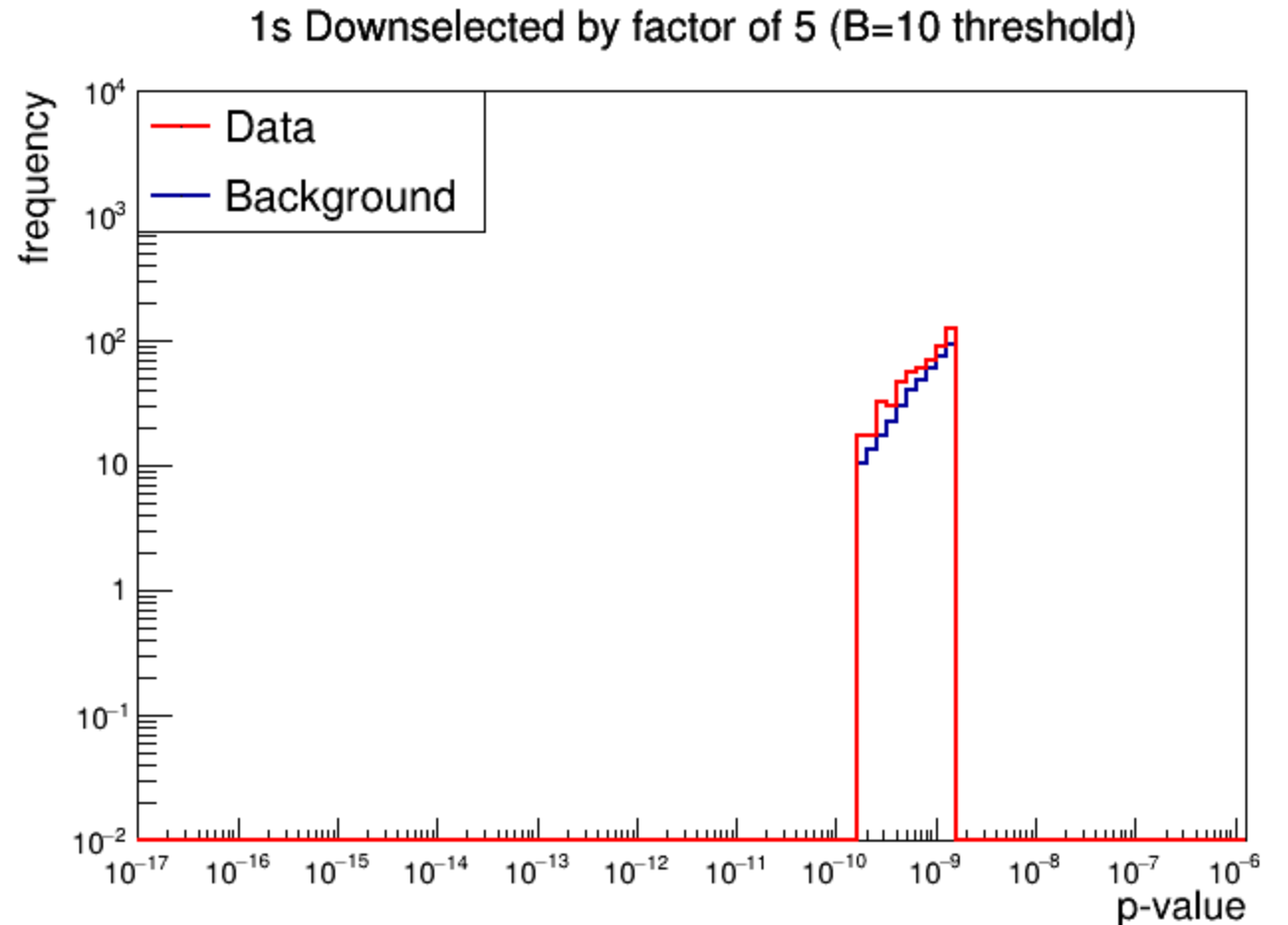
1s Downselected by 4 (B=10 threshold)

- 1111 events in H_data
- 1133 events in H_bkg
- KS test
 - Statistic = 0.0769
 - Pvalue = 1



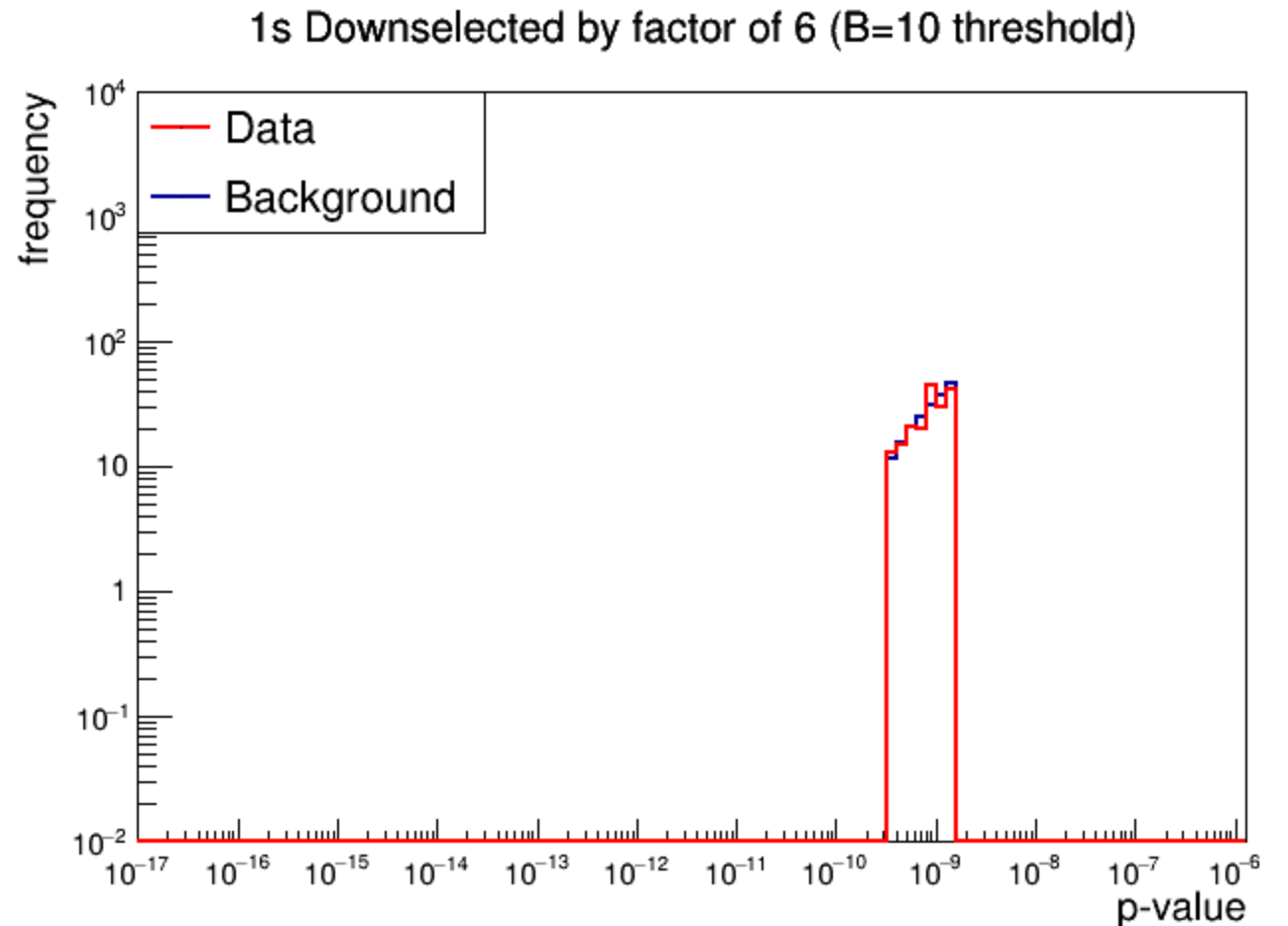
1s Downselected by 5 (B=10 threshold)

- 504 events in H_data
- 406 events in H_bkg
- KS test
 - Statistic = 0.3333
 - Pvalue = 0.6030



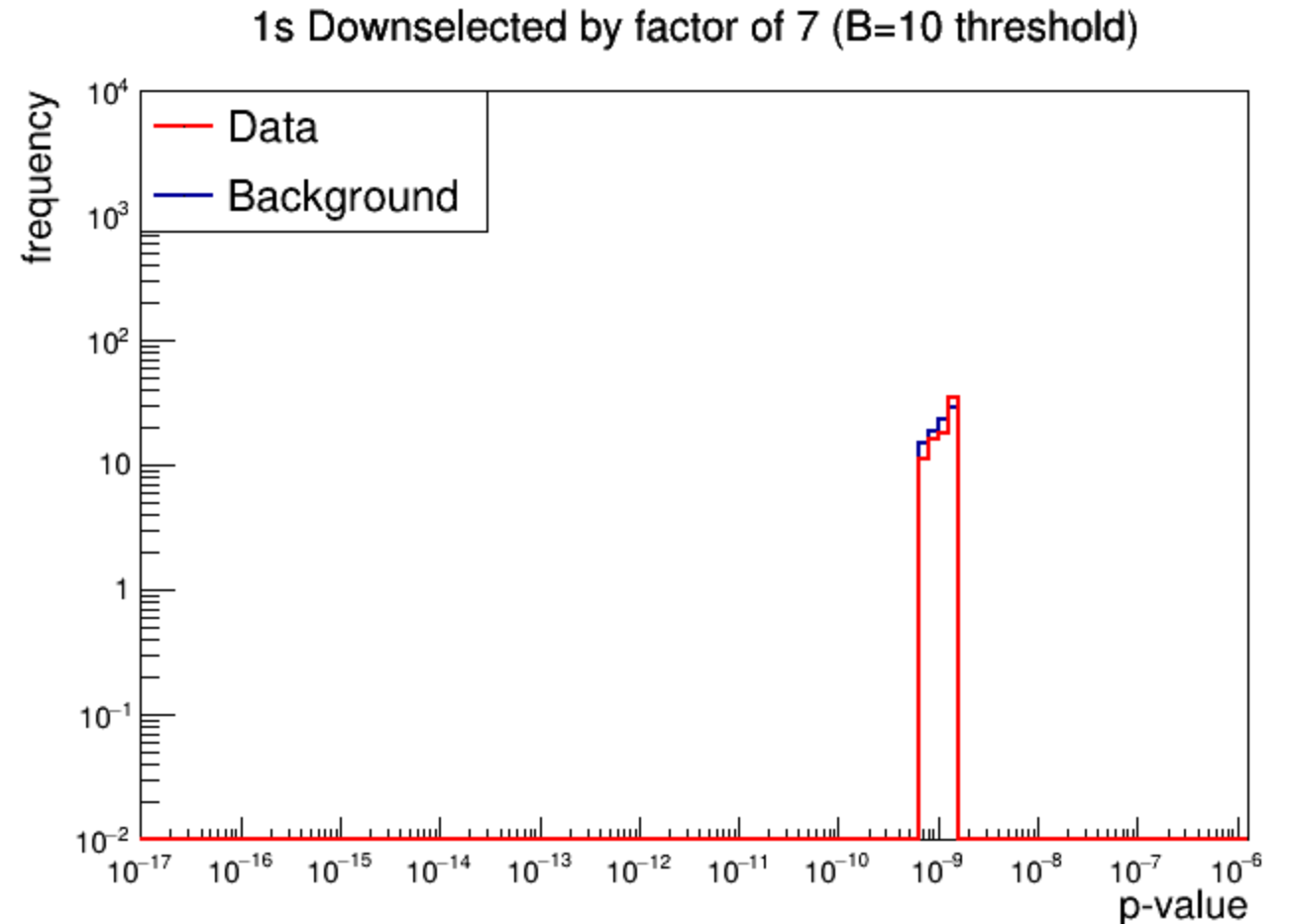
1s Downselected by 6 (B=10 threshold)

- 185 events in H_data
- 189 events in H_bkg
- KS test
 - Statistic = 0.1667
 - Pvalue = 0.9999



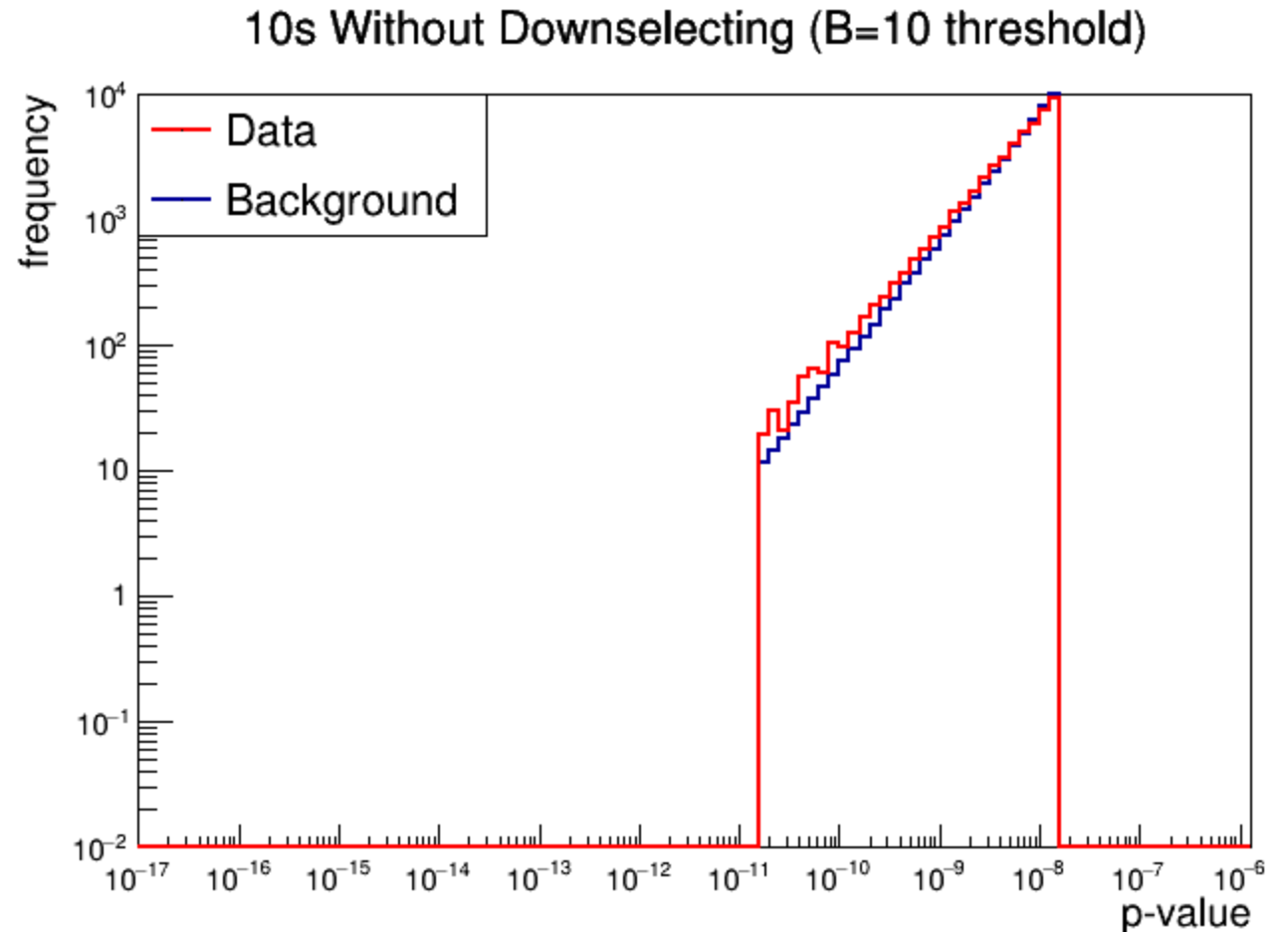
1s Downselected by 7 (B=10 threshold)

- 80 events in H_data
- 85 events in H_bkg
- KS test
 - Statistic = 0.5
 - Pvalue = 0.5344



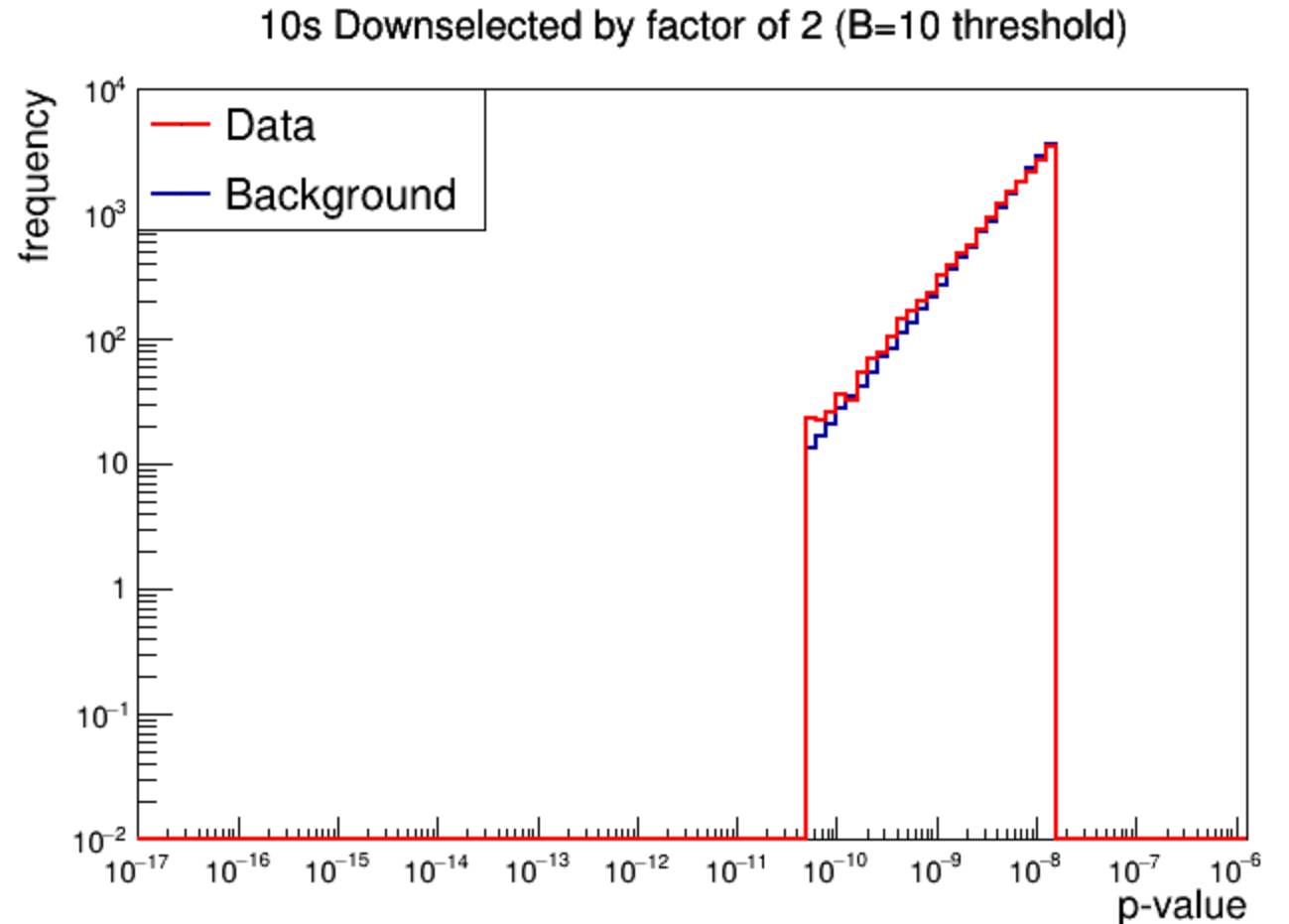
10s no downselecting (B=10 threshold)

- 47759 events in H_Data
- 47217 events in H_bkg
- KS test
 - Statistic= 0.1034
 - Pvalue = 0.9961



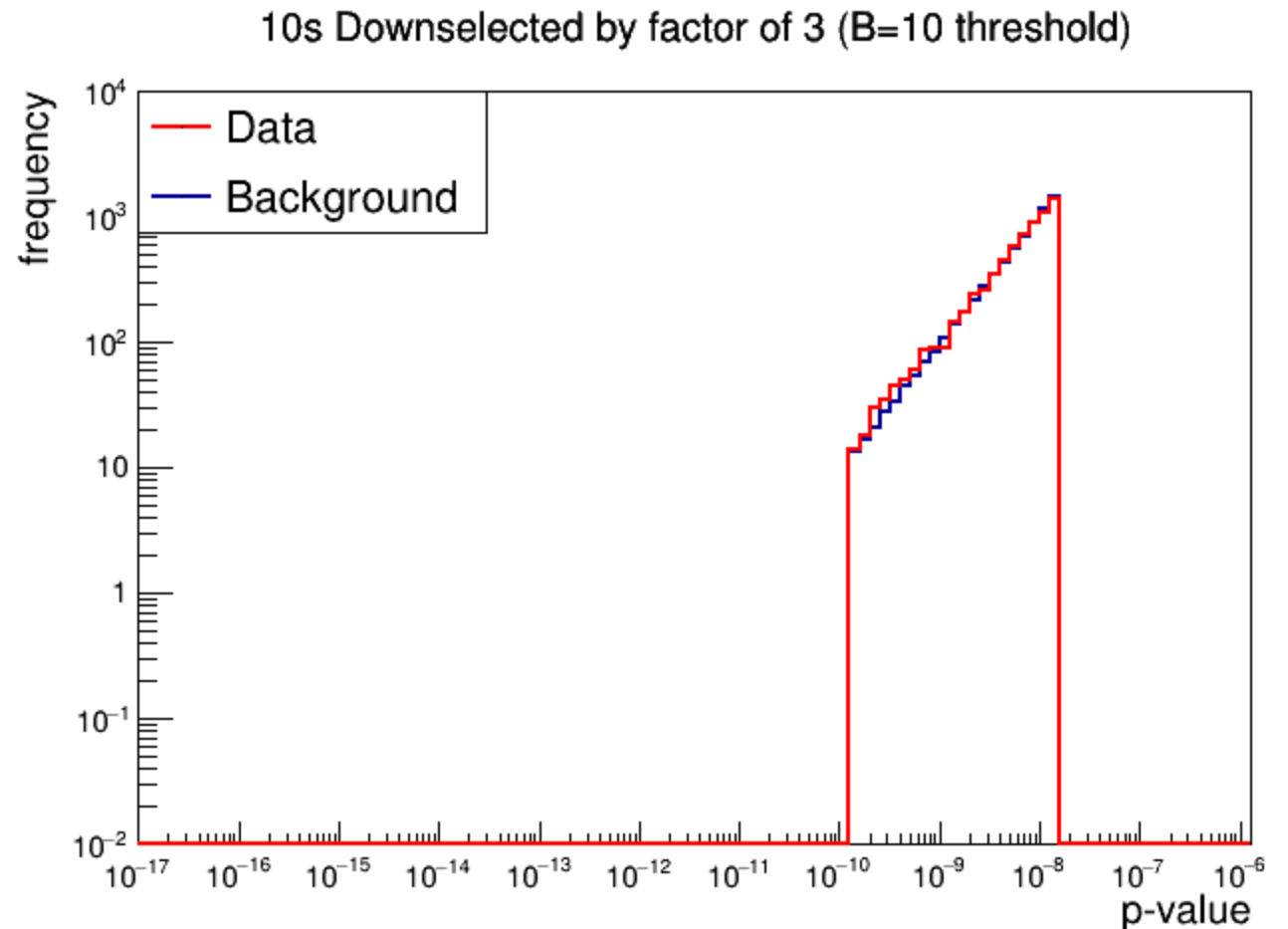
10s downselected by 2 (B=10 threshold)

- 17328 events in H_data
- 17203 events in H_bkg
- KS test
 - Statistic = 0.12
 - Pvalue = 0.9896



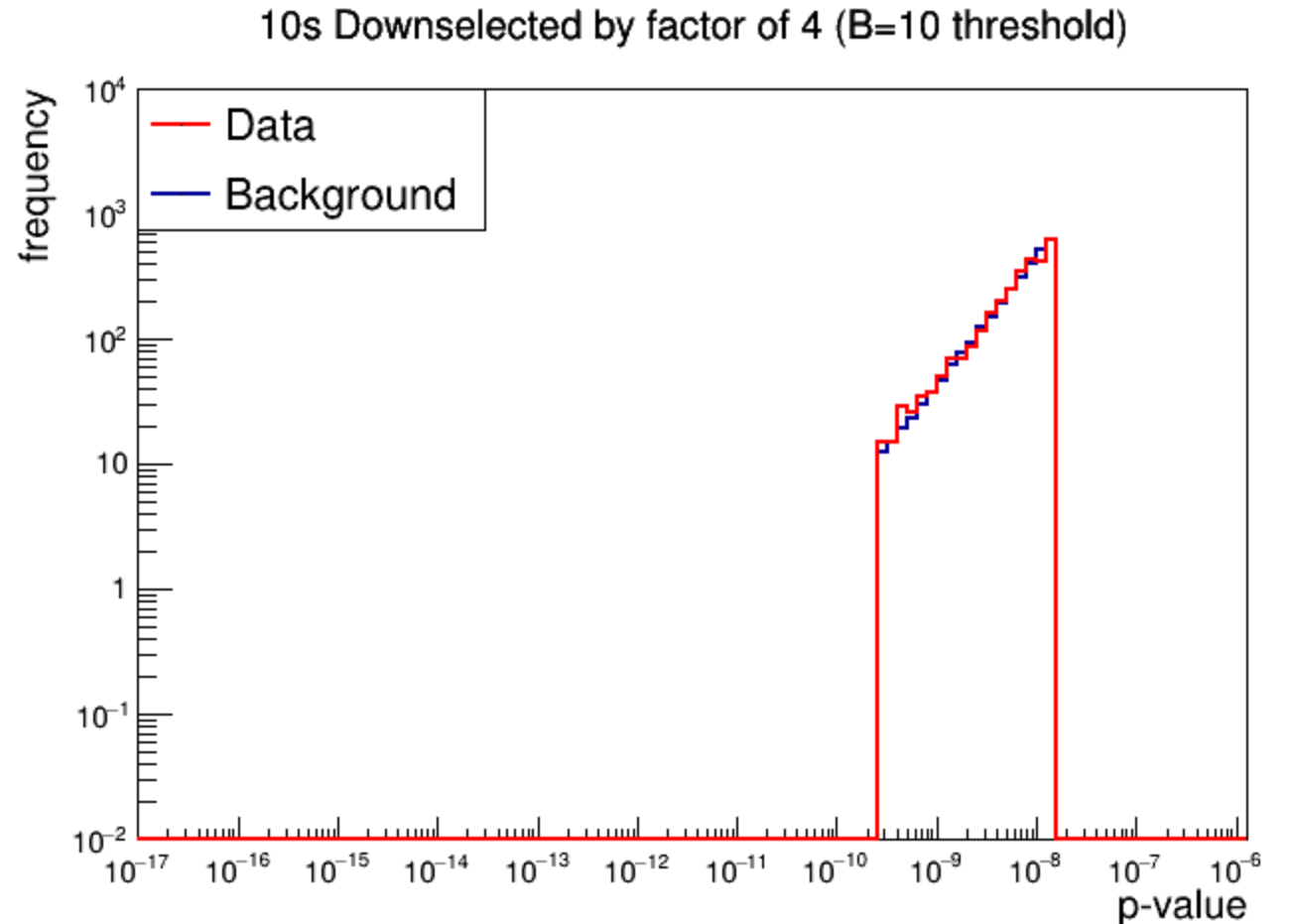
10s Downselected by 3 (B=10 threshold)

- 6772 events in H_data
- 6770 events in H_bkg
- KS test
 - Statistic = 0.0952
 - Pvalue = 0.9999



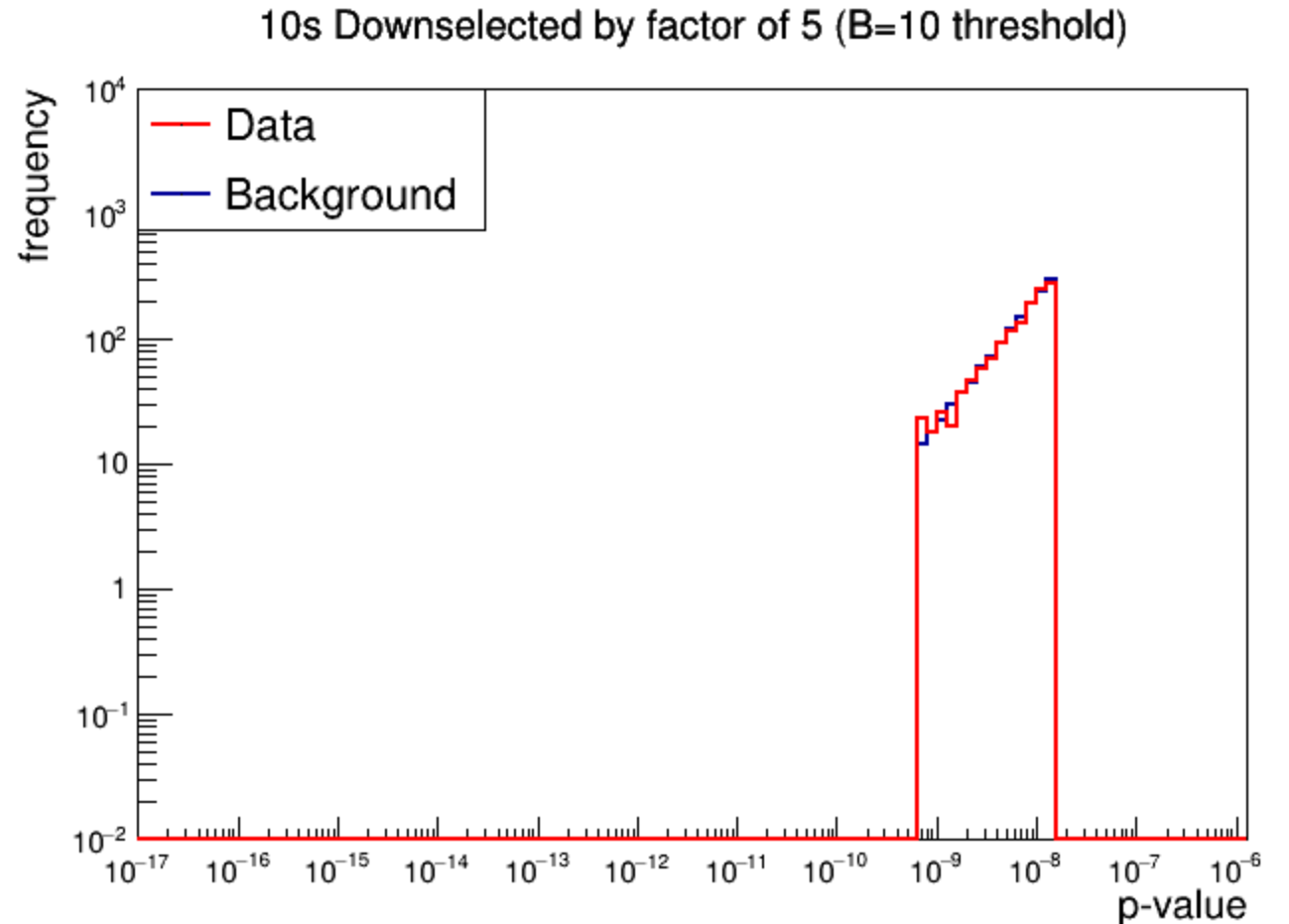
10s Downselected by 4 (B=10 threshold)

- 2960 events in H_data
- 2964 events in H_bkg
- KS test
 - Statistic = 0.1176
 - Pvalue = 0.9994



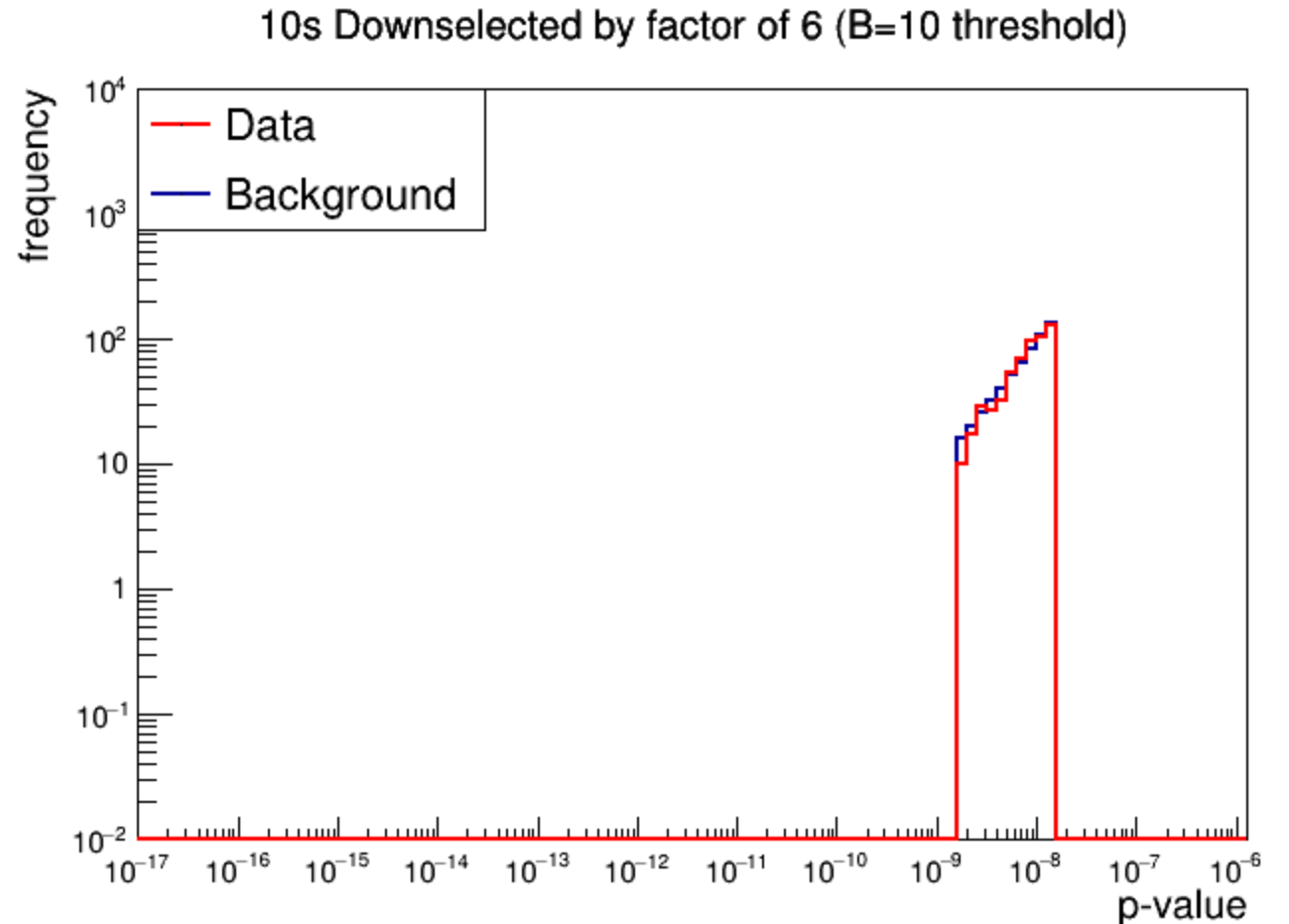
10s Downselected by 5 (B=10 threshold)

- 1368 events in H_data
- 1389 events in H_bkg
- KS test
 - Statistic = 0.1429
 - Pvalue = 0.9971



10s Downselected by 6 (B=10 threshold)

- 563 events in H_data
- 574 events in H_bkg
- KS test
 - Statistic = 0.1
 - Pvalue = 1



10s Downselected by 7 (B=10 threshold)

- 242 events in H_data
- 329 events in H_bkg
- KS test
 - Statistic = 0.25
 - Pvalue = 0.9290

