



Omicron is currently running on VSR2 data

About 150 channels have been processed so far.

Auxiliary triggers can be used to produce efficient vetoes.

The most straight-forward way to do so is to use UPV

Omicron triggers are stored in root files for better performances

→ A UPV plugin needed to be developed to directly read and process Omicron triggers

The original UPV method has been reproduced and a few improvements have been implemented

UPV: how does it work

We consider 1 auxiliary channel, then:

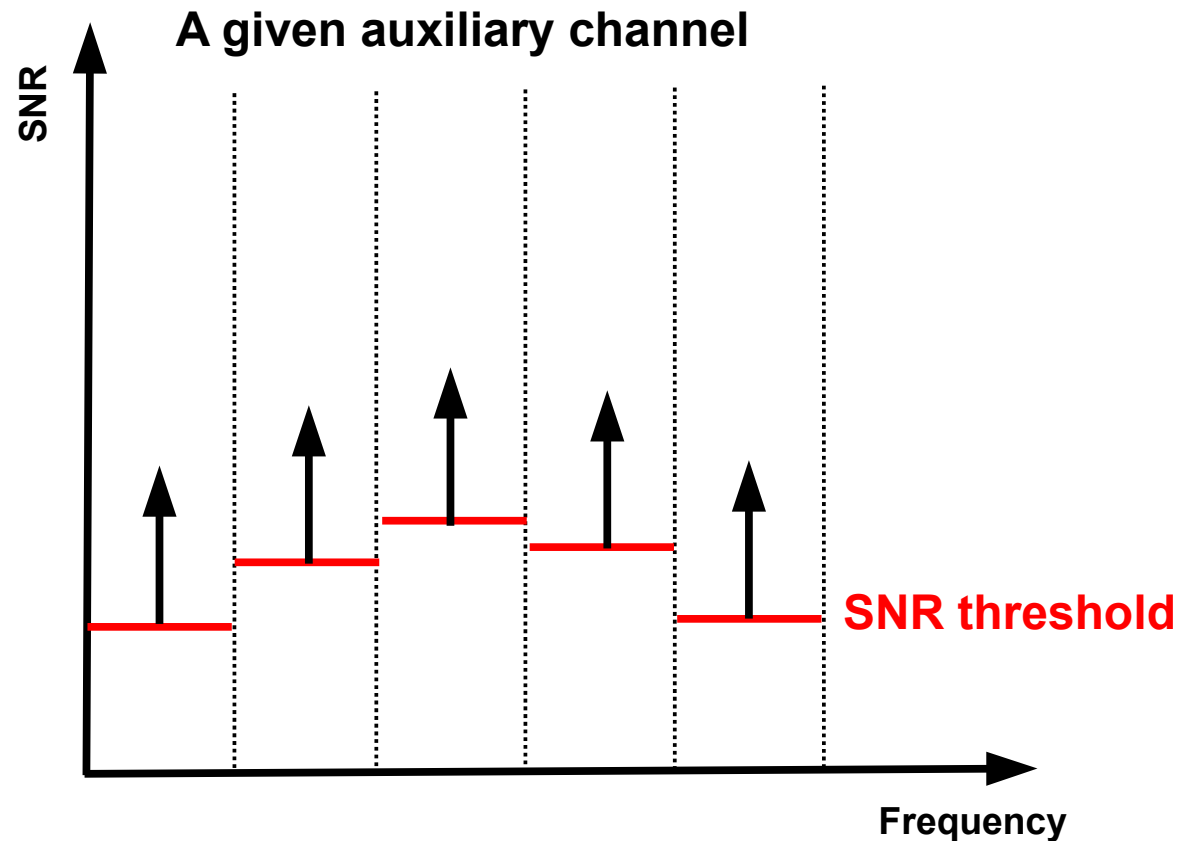
- 1/ we divide the Omicron clusters into frequency bins
- 2/ we raise the SNR threshold in each bin and then:
- 3/ we define a time segment for each cluster with the length of the cluster
- 4/ we use this set of segments to veto $h(t)$ triggers
- 5/ we measure the use-percentage for this set of segments

We stop there if:

- 1/ $UP > 50\%$
- 2/ $eff/dead-time > 2$

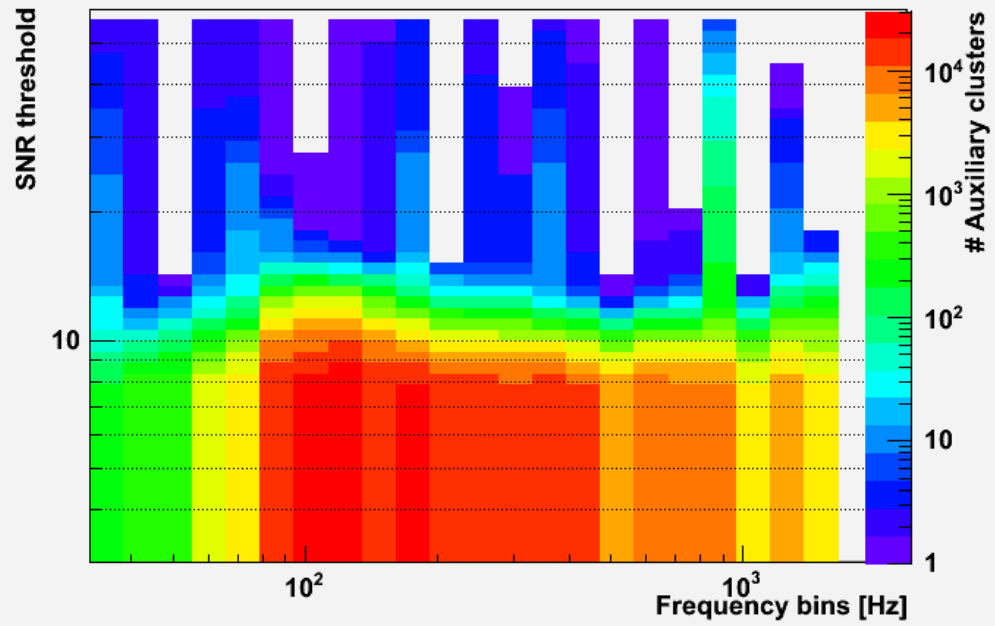
Otherwise we raise the threshold even more

The frequency is crucial to get good vetoes.
For example, magnetic sensors are mostly useful between 1 and 4Hz

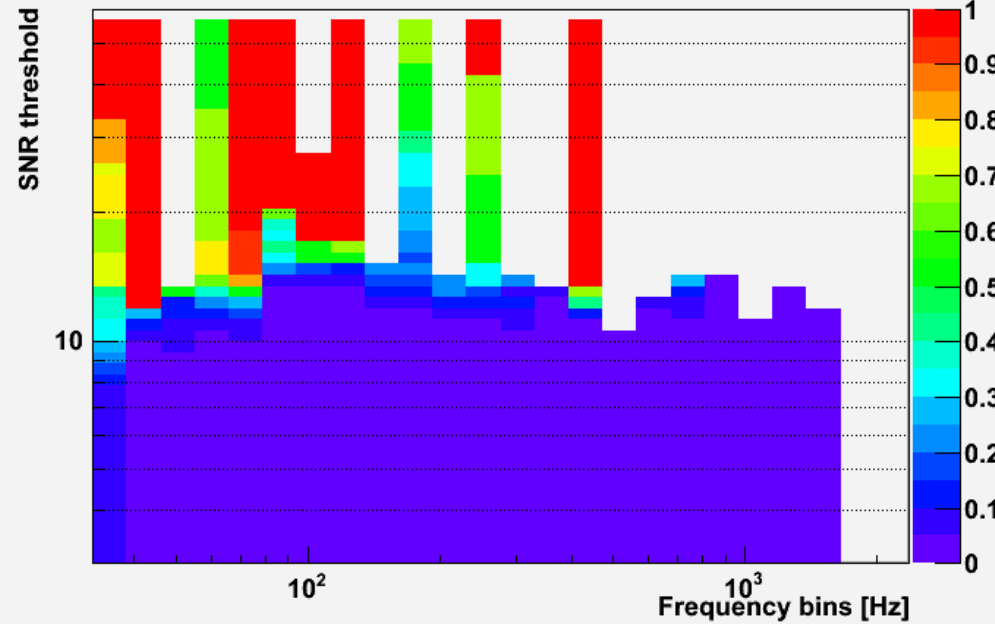


UPV: Example of a Pr_B2_8MHz_AC

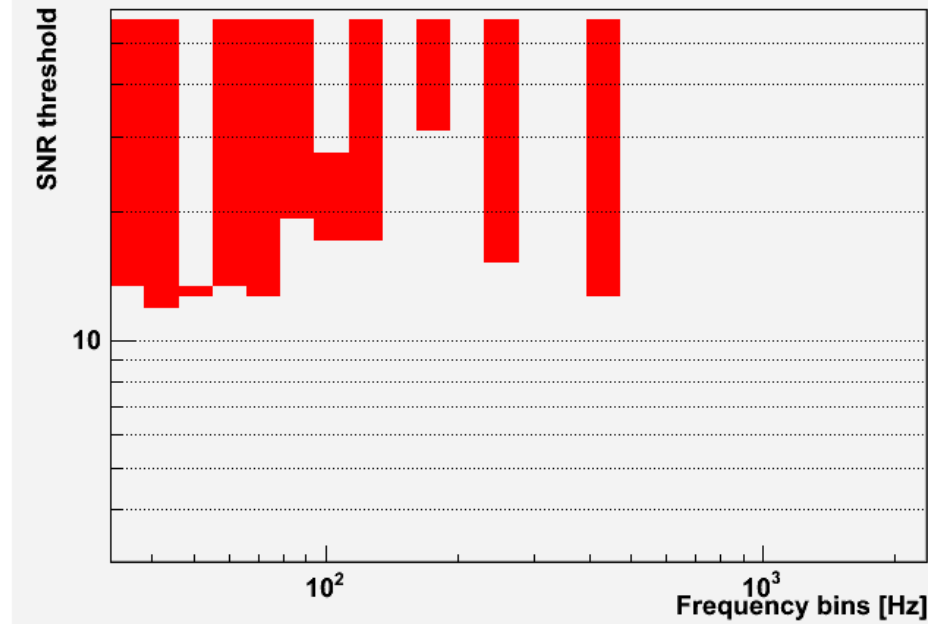
Auxiliary clusters



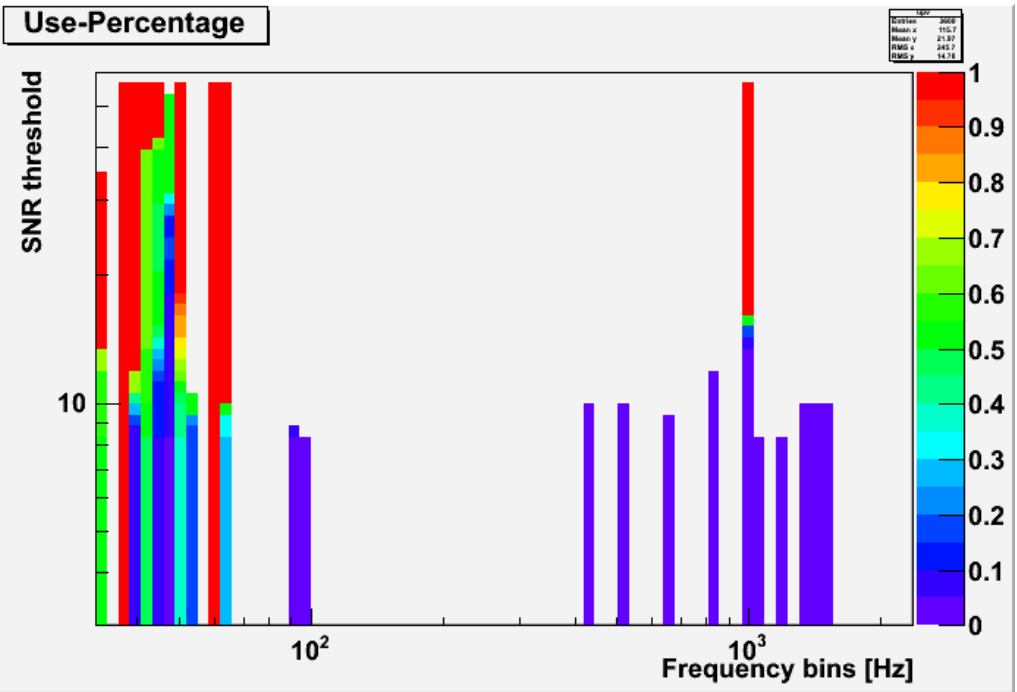
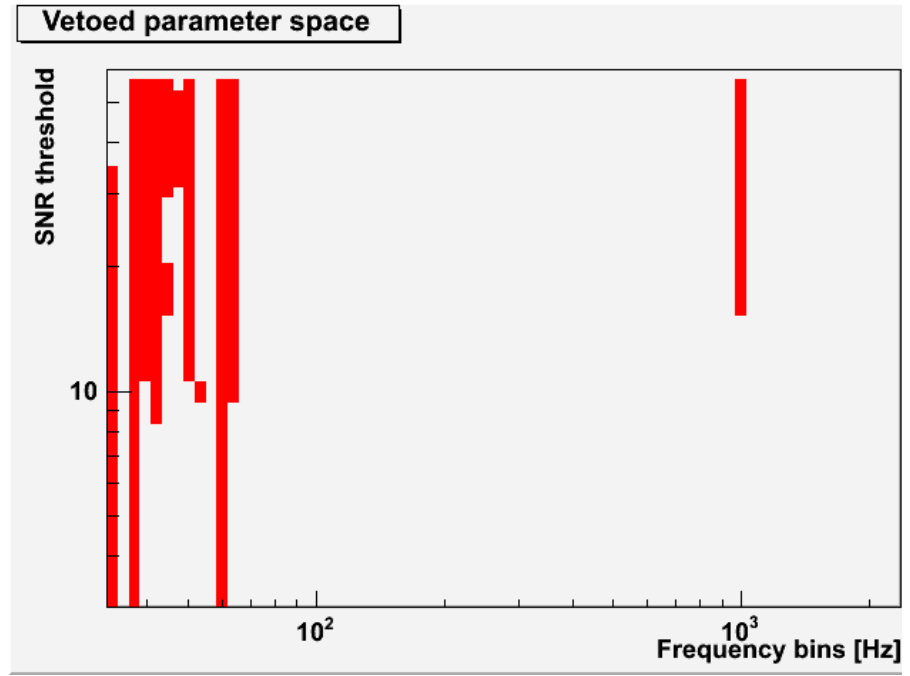
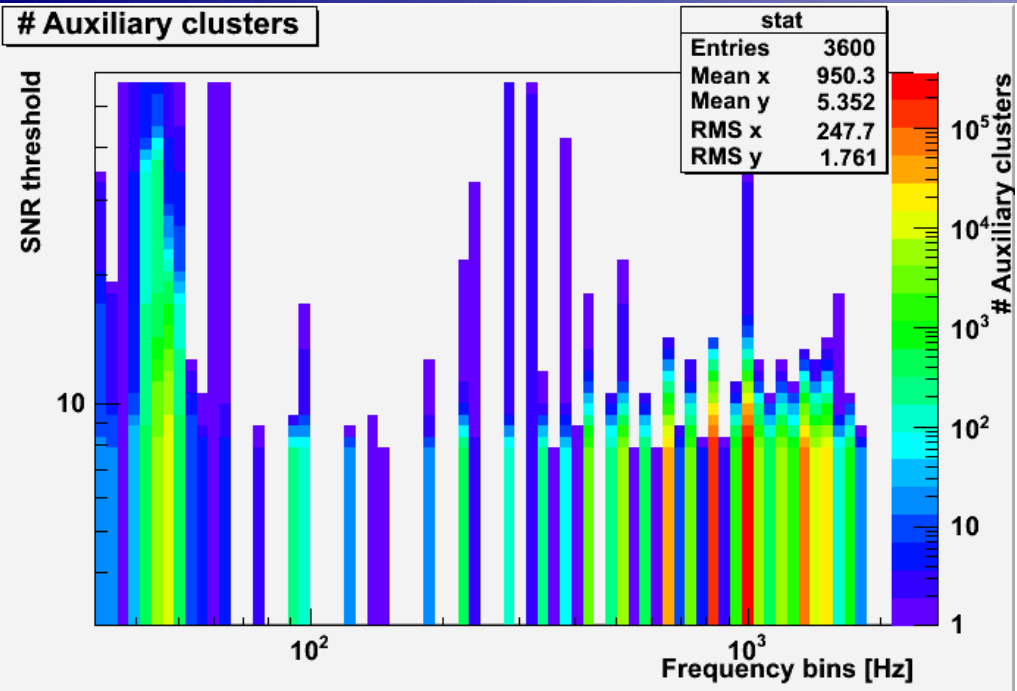
Use-Percentage



Vetoed parameter space



UPV: Example of a magnetic sensor



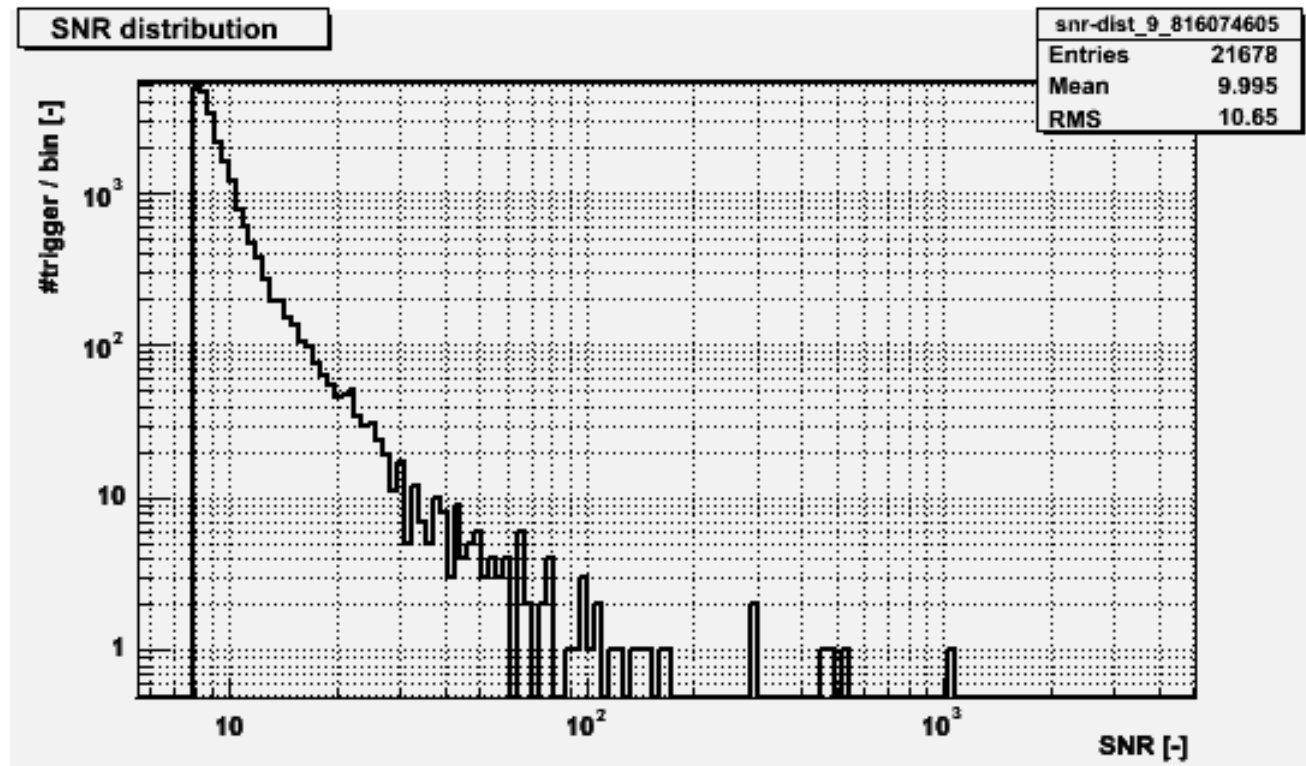
To measure the performance we used the DQperf tool available in GWOLLUM
We use 1 week of h(t) triggers as a testing sample

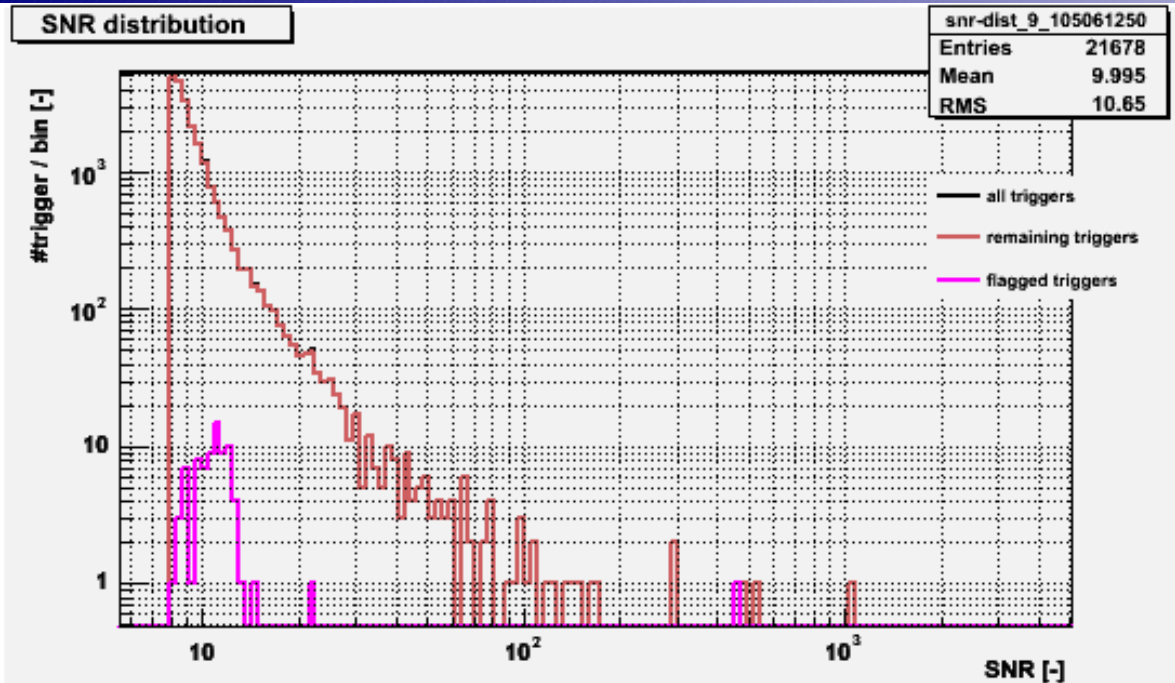
We used vetoes produced by:

NewUPV : <https://wwwcascina.virgo.infn.it/DataAnalysis/DQburst/UPVperf>

OldUPV : <https://wwwcascina.virgo.infn.it/DataAnalysis/DQburst/OldUPVPerf/>

standard DQ flags : <https://wwwcascina.virgo.infn.it/DataAnalysis/DQburst/BRMSPerf/>





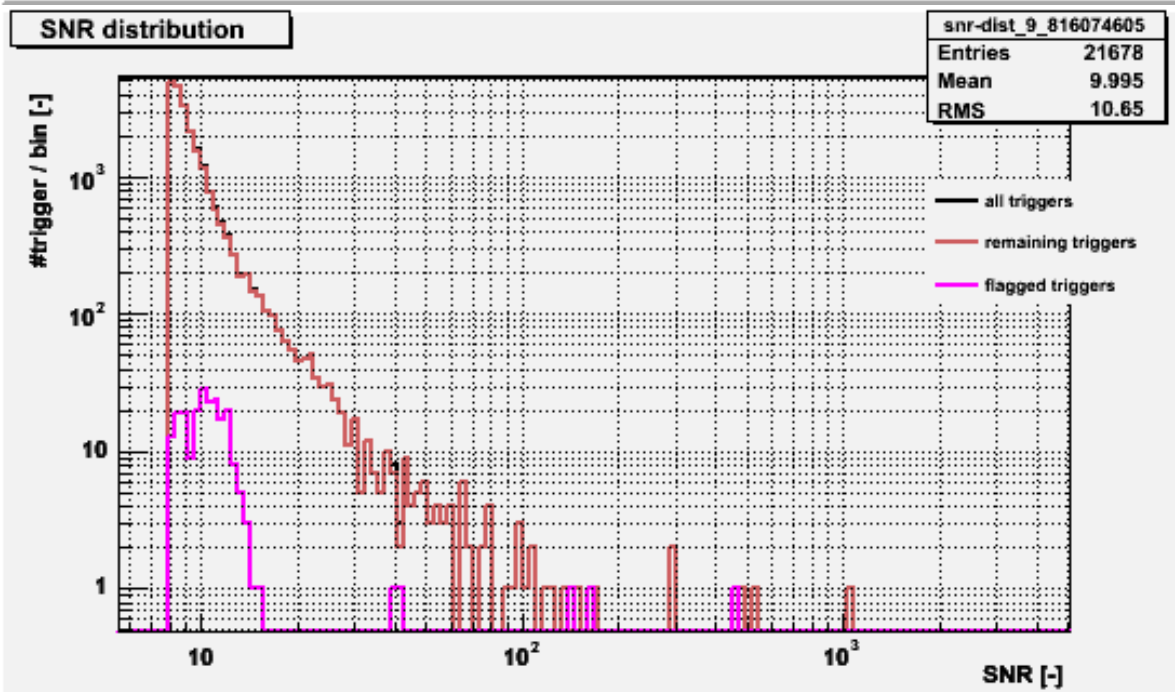
Em_MABDCE03

OldUPV, SNR>8:

N vetoed events: 78

UP = 94.5%

Eff/deadtime = 7.2

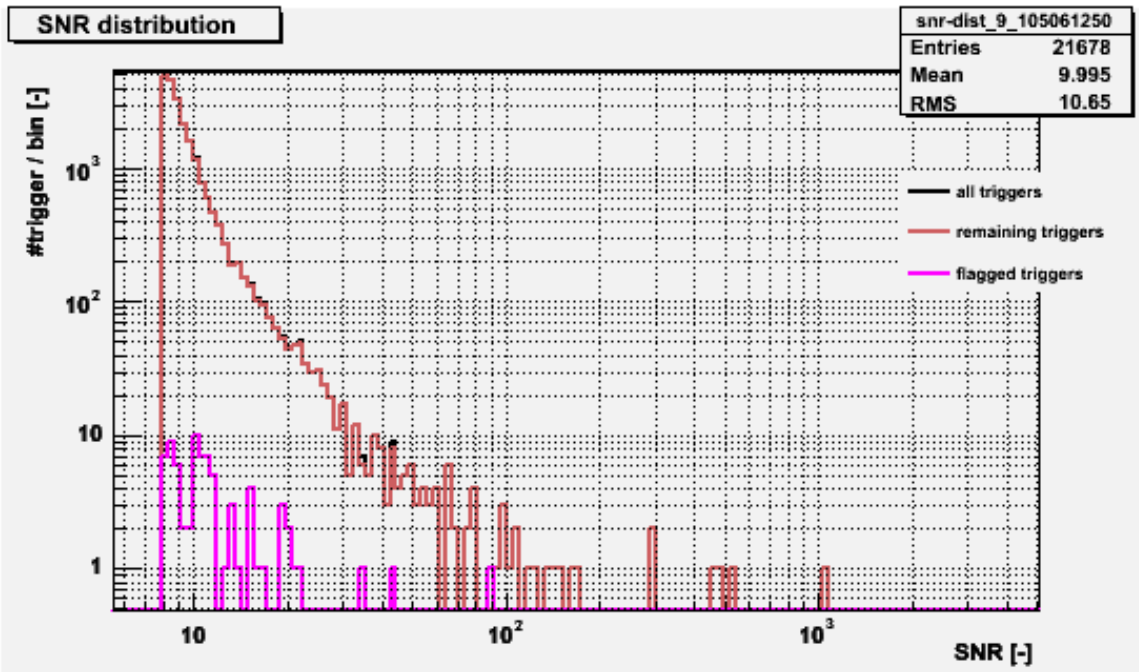


NewUPV, SNR>8:

N vetoed events: 215

UP = 69.6%

Eff/deadtime = 15.3



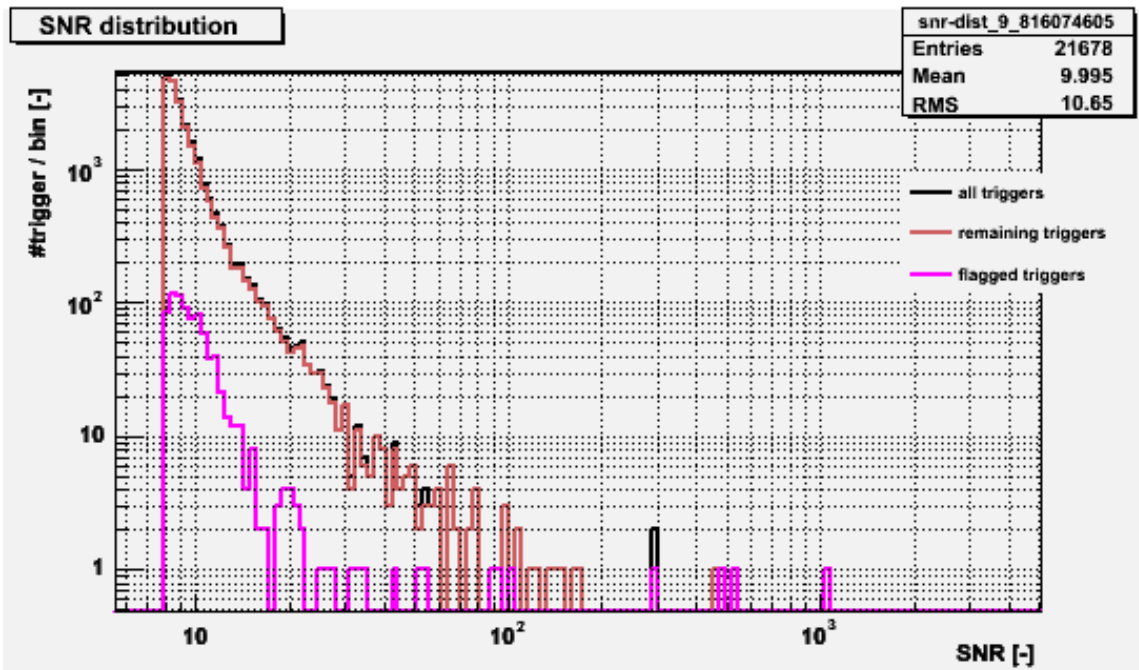
Pr_B2_DC

OldUPV, SNR>8:

N vetoed events: 76

UP = 81.5%

Eff/deadtime = 6.4

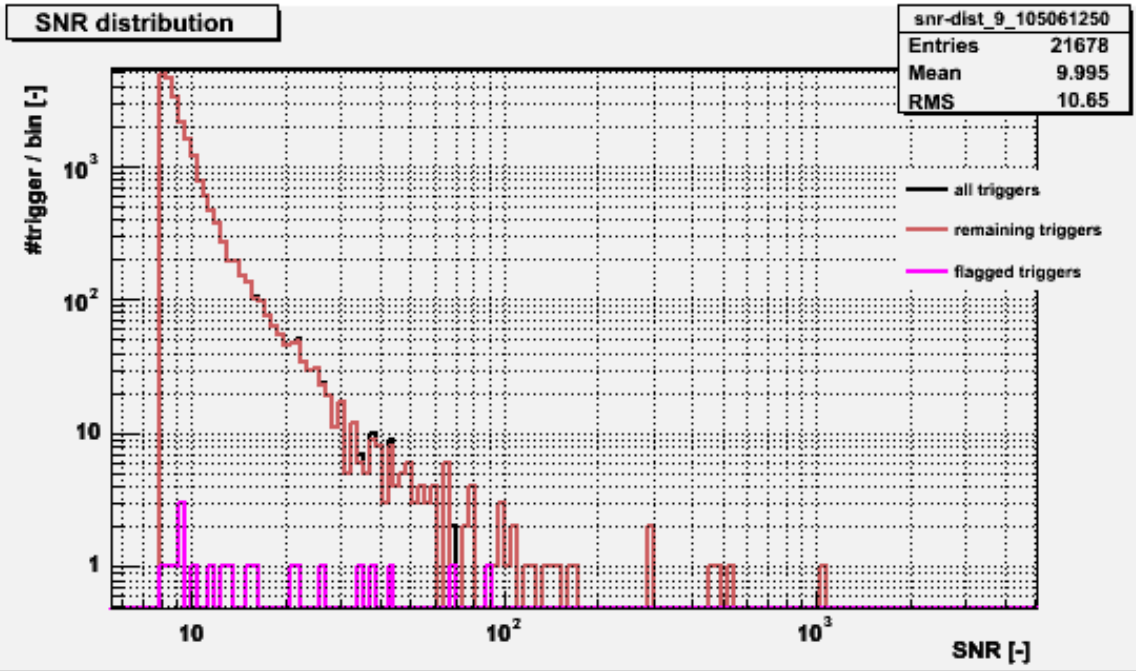


NewUPV, SNR>8:

N vetoed events: 803

UP = 60.1%

Eff/deadtime = 32.4



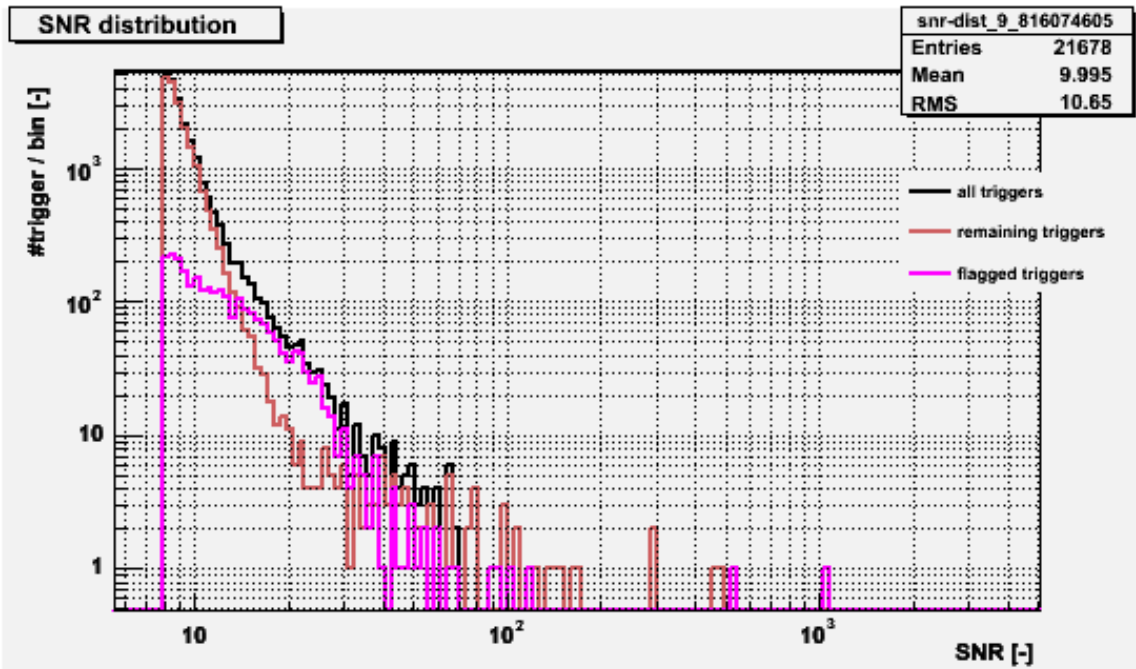
Pr_B8_ACp

OldUPV, SNR>8:

N vetoed events: 20

UP = 81.8%

Eff/deadtime = 6.3



NewUPV, SNR>8:

N vetoed events: 2634

UP = 38.4%

Eff/deadtime = 7.2