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PXD DQM status in basf2

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Outline

1. Introduction.
2. Current status:
    1. PXD 2D correlations and hitmap monitor.
    2. PXD 1D correlations and hitmap monitor.
    3. PXD Basic monitor.
    4. PXD Advance monitor.
3. Status summary and plans.

Introduction

1. Set of plots per No. of triggers is generate and stored to disk.
2. Comparing with reference plots create green/orange/red/gray flag
3. Flags are propagate to automatical shifter emergency system
4. Flags are preview on summary and summary of summaries plots

Branch in basf2: feature/DQM_VXD_Correlations

PXD 2D correlations and hitmap monitor

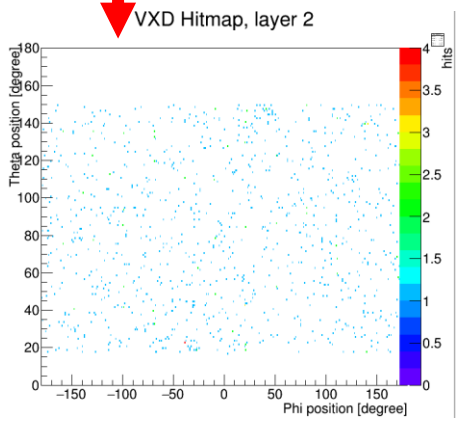
- PXD_Basic;1
- PXD_Advance;1
- SVD_Basic;1
- SVD_Advance;1
- VXD_1D_Correlations_Layers_23;1
- VXD_1D_Correlations_Other_Neighboar;1
- VXD_1D_Hitmaps;1
- VXD_1D_Correlations_Others;1
- VXD_Correlations_Layers_23;1
- VXD_Correlations_Other_Neighboar;1
- VXD_Hitmaps;1
- VXD_Correlations_Others;1

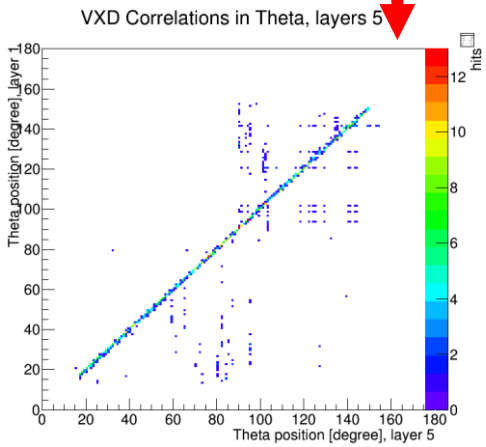
- VXD_Correlations_Layers_23;1
  - VXD_Correlations_Phi_L2_L3;1
  - VXD_Correlations_Theta_L3_L2;1

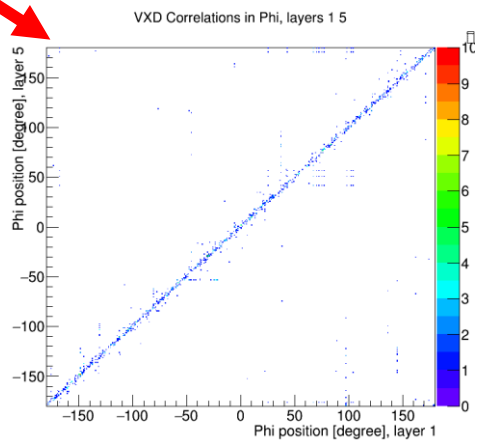
- VXD_Correlations_Others;1
  - VXD_Correlations_Phi_L1_L3;1
  - VXD_Correlations_Phi_L1_L4;1
  - VXD_Correlations_Phi_L1_L5;1
  - VXD_Correlations_Phi_L1_L6;1
  - VXD_Correlations_Phi_L2_L4;1
  - VXD_Correlations_Phi_L2_L5;1
  - VXD_Correlations_Phi_L2_L6;1
  - VXD_Correlations_Theta_L3_L1;1
  - VXD_Correlations_Phi_L3_L5;1
  - VXD_Correlations_Phi_L3_L6;1
  - VXD_Correlations_Theta_L4_L1;1
  - VXD_Correlations_Theta_L4_L2;1
  - VXD_Correlations_Phi_L4_L6;1
  - VXD_Correlations_Theta_L5_L1;1
  - VXD_Correlations_Theta_L5_L2;1
  - VXD_Correlations_Theta_L5_L3;1
  - VXD_Correlations_Theta_L6_L1;1
  - VXD_Correlations_Theta_L6_L2;1
  - VXD_Correlations_Theta_L6_L3;1
  - VXD_Correlations_Theta_L6_L4;1

- VXD_Hitmaps;1
  - VXD_Hitmap_L1;1
  - VXD_Hitmap_L2;1
  - VXD_Hitmap_L3;1
  - VXD_Hitmap_L4;1
  - VXD_Hitmap_L5;1
  - VXD_Hitmap_L6;1

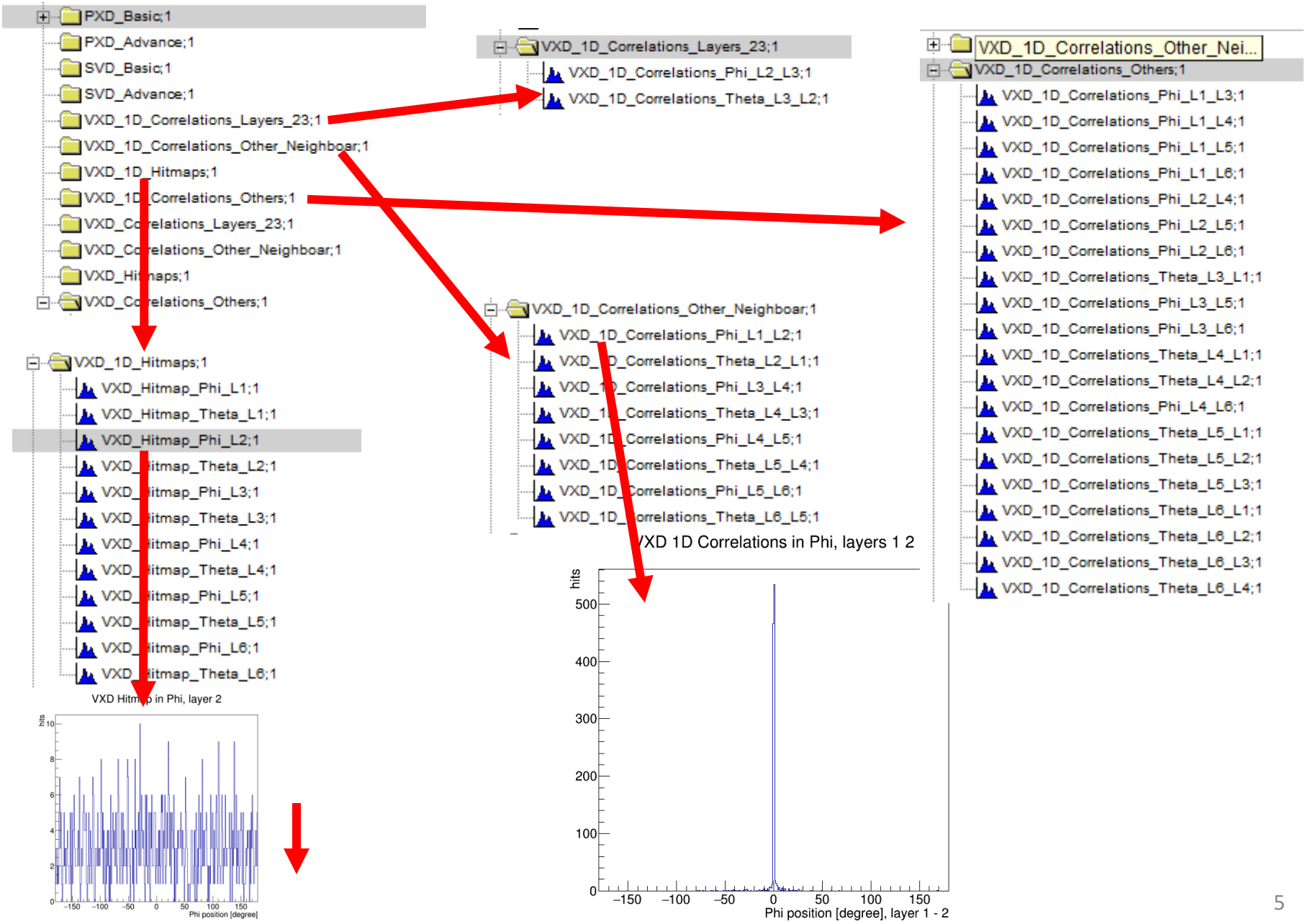
- VXD_Correlations_Other_Neighboar;1
  - VXD_Correlations_Phi_L1_L2;1
  - VXD_Correlations_Theta_L2_L1;1
  - VXD_Correlations_Phi_L3_L4;1
  - VXD_Correlations_Theta_L4_L3;1
  - VXD_Correlations_Phi_L4_L5;1
  - VXD_Correlations_Theta_L5_L4;1
  - VXD_Correlations_Phi_L5_L6;1
  - VXD_Correlations_Theta_L6_L5;1



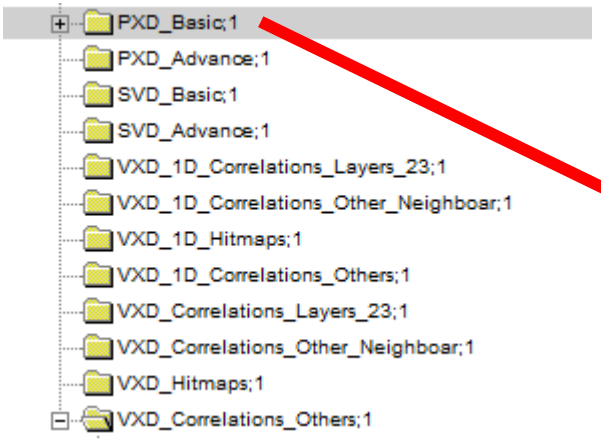


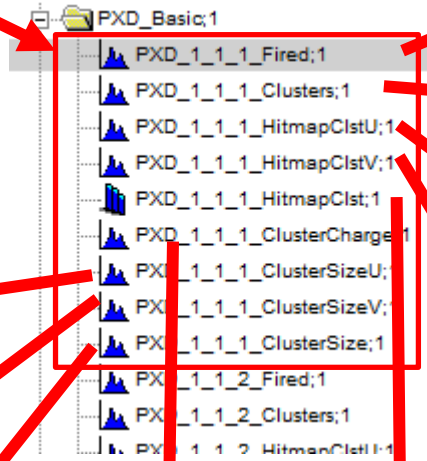


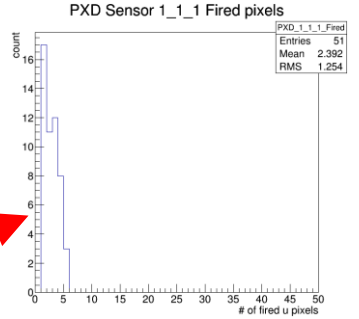
PXD 1D correlations and hitmap monitor

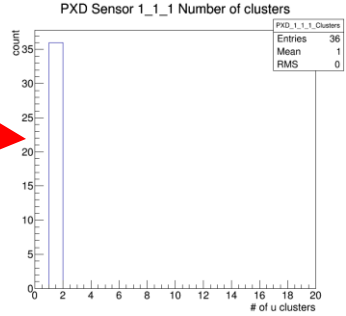


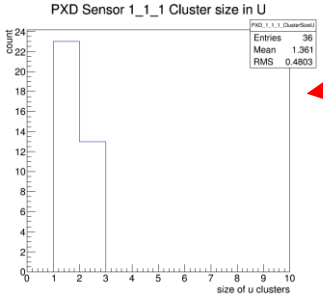
PXD Basic DQM

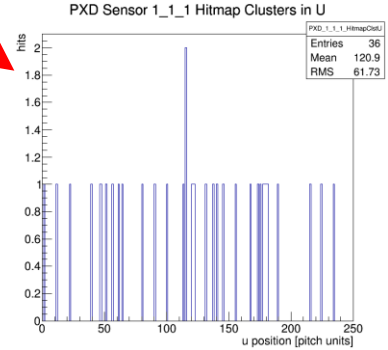


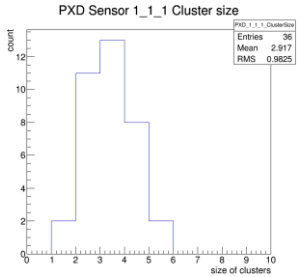


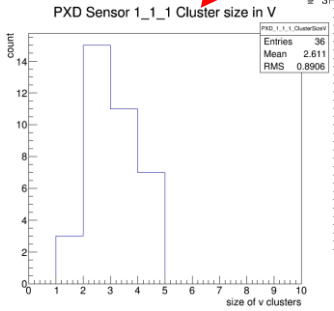


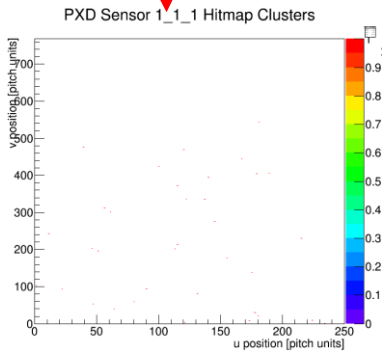


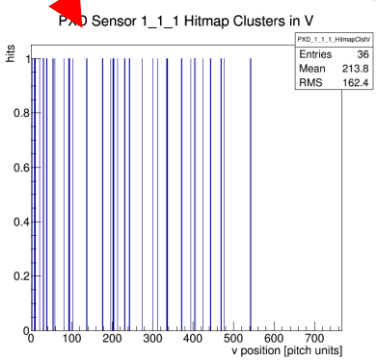




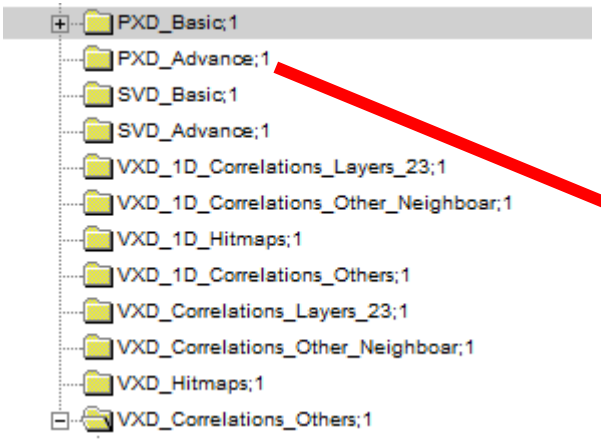


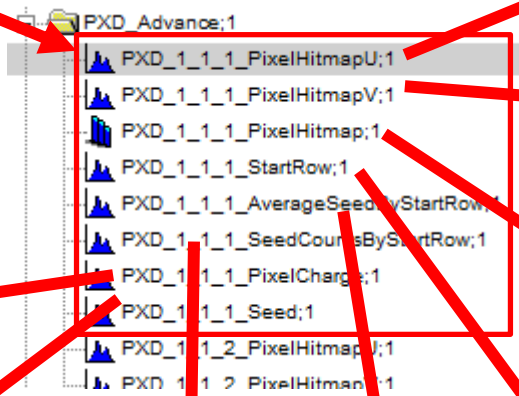


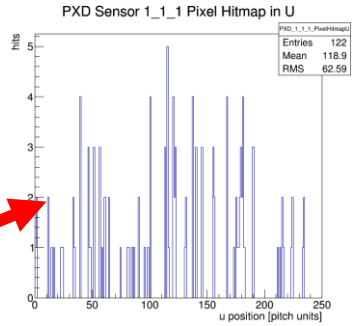


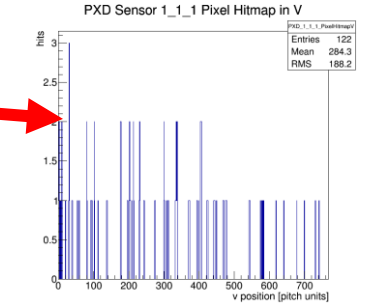


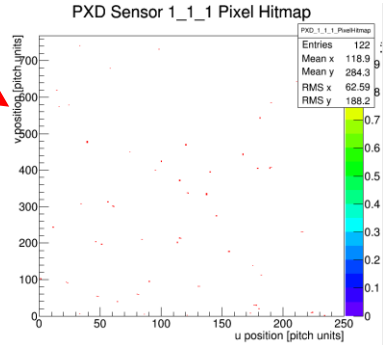
PXD Advance DQM

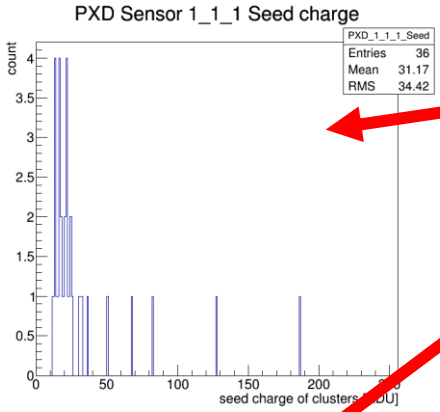


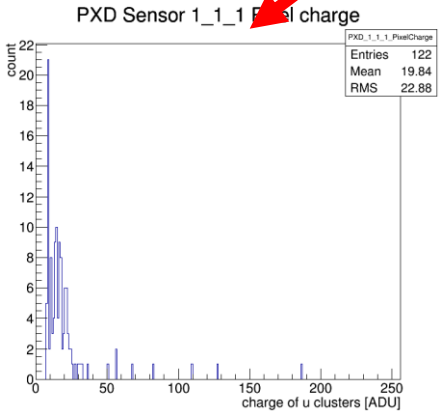


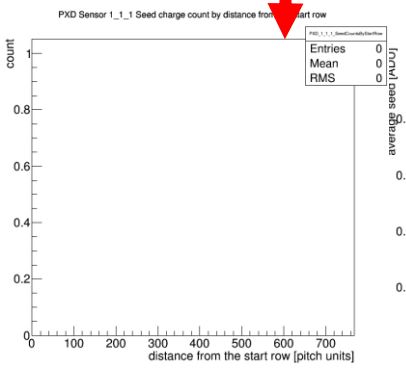


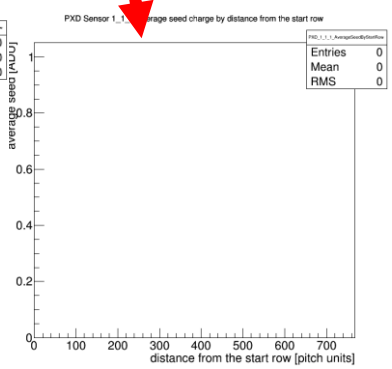


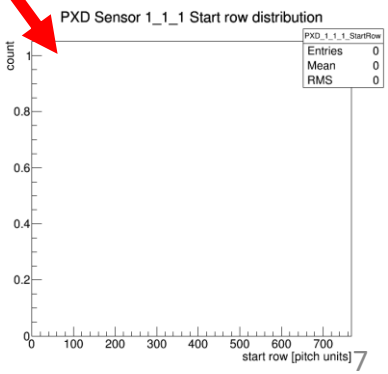












Status summary and plans.

Observable variables for PXD and SVD (VXD) on basf2.
Missing, **Done**, **For discussion**, **Not related to PXD**

shifter – mean shifter need check shape of histogram.
expert – mean is on call for shifter in case of non-green flag is coming, he check set of detail histograms for sensor, for pixel/strip exert evaluate list of noisy/dead channels for masking.
flag – mean there is automatic comparison of shape of histogram and check sum of hits, MPV or RMS (depend of shape of plot) and propagate to cumulative flags for shifter.
per sensor/pixel/strip – need higher statistics, can create also set of histograms but just creation of flag should be enough.

Status summary and plans.

Observable variables for PXD and SVD (VXD) on basf2.
Missing, **Done**, **For discussion**, **Not related to PXD**

Pixel level:
input: pixel/strip: position, signal, timebin(SVD)
monitor:

1. ~~trigger rate: number of triggers per time unit, no output~~ **– not in PXD DQM**
2. occupancy (number of hits per xxx triggers) **– PXD_%_Fired (per sensor)**
   a. per layer – shifter, hitmap, propagate histograms 2x 1D, 1x 2D, flag
   b. per sensor – expert, propagate flag **– PXD_%_PixelHitmap(,U,V)**
   c. per pixel/strip – expert, calibration, propagate flag **for masking! ??? Do we need it for shifter?**
3. signal (number of signals per xxx triggers)
   a. per layer – shifter, histogram, propagate histograms 1x 1D, flag
   b. per sensor – expert, propagate flag **– PXD_%_PixelCharge**
   c. per pixel/strip – expert, calibration, propagate flag **For calibration! ??? Do we need it for shifter?**
4. timebin distribution (**only SVD**, timebins per xxx triggers)
   a. per layer – shifter, histogram, propagate histograms 1x 2D, flag
   b. per sensor – expert, propagate flag
   c. per pixel/strip – expert, propagate flag

Status summary and plans.

Observable variables for PXD and SVD (VXD) on basf2.

Missing, **Done**, **For discussion**, **Not related to PXD**

Cluster level:

input: cluster: position, seed, signal, cluster size in u, v, u+v(PXD), shape (PXD), time(SVD)

monitor:

1. occupancy (number of clusters per xxx triggers) **– PXD_%_Clusters (per sensor)**
   a. per layer – shifter, hitmap, propagate histograms 2x 1D, 1x 2D, flag
   b. per sensor – expert, propagate flag **– PXD_%_HitmapClst(,U,V)**
   ~~c. per pixel/strip – expert, calibration, propagate flag **??? Do we need it for shifter?**~~
2. seed and signal (number of signals per xxx triggers)
   a. per layer – shifter, histogram, propagate histograms 1x 1D, flag **??? Do we need it? For shifter?**
   b. per sensor – expert, propagate flag **– PXD_%_ClusterCharge/_Seed**
   ~~c. per pixel/strip – expert, calibration, propagate flag **??? Do we need it for shifter?**~~
3. time distribution (**only SVD**, time per xxx triggers)
   a. per layer – shifter, histogram, propagate histograms 1x 1D, flag
   b. per sensor – expert, propagate flag
   c. per pixel/strip – expert, propagate flag
4. correlations between layers
   a. neighboar layers – shifter, hitmap, propagate histograms 2x 1D, 1x 2D, flag **– done**
   b. non- neighboar layers – expert, hitmap, propagate histograms 2x 1D, 1x 2D, flag **– done**

Thank you for your attention.