

Physics Occupancies

Instructions on how to make occupancy plots for both data and MC files.

For a data file, run the following command on an EVIO file.

```
java -cp <jar file> org.hps.evio.EvioToLcio -d <detector> -x hps-java/steering-files/src/main/resources/org/hps/steering/analysis/SensorOccupancyPlotsSteeringFile.lcsim <EVIO file> -DoutputFile=<output file>
```

For an MC file, run the following command on a readout file.

```
java -jar <jar file> hps-java/steering-files/src/main/resources/org/hps/steering/analysis/SensorOccupancyPlotsSteeringFile.lcsim -i <readout file> -DoutputFile=<output file>
```

These commands will output a root file of both strip and cluster occupancies as a function of both channel number and position. Max sample plots are also output.

In order to analyze, you need to clone the HPS-CODE repository.

```
git clone https://github.com/JeffersonLab/HPS-CODE
```

Run the following command on the output of the previous java command to produce plots.

Use option -n <number of strips> to plot the occupancy of the strip away from the beam

```
python HPS-CODE/ANALYSIS/SVT/MakeOccupancyPlots.py <output file base name> <input root file>
```

Output:

<output file base name>_stripoccupancy.pdf - strip occupancy at each sensor, max occupancy at each sensor, and occupancy at the desired near-edge channel

<output file base name>_clusteroccupancy.pdf - cluster occupancy at each sensor, max occupancy at each sensor, and occupancy at the desired near-edge channel

<output file base name>.root - same plots as the two pdf files above but as root histograms

Order of "Sensor Number" is as follows (starting at 0):

0. module_L1b_halfmodule_axial_sensor0
1. module_L1b_halfmodule_stereo_sensor0
2. module_L1t_halfmodule_axial_sensor0
3. module_L1t_halfmodule_stereo_sensor0
4. module_L2b_halfmodule_axial_sensor0
5. module_L2b_halfmodule_stereo_sensor0
6. module_L2t_halfmodule_axial_sensor0
7. module_L2t_halfmodule_stereo_sensor0
8. module_L3b_halfmodule_axial_sensor0
9. module_L3b_halfmodule_stereo_sensor0
10. module_L3t_halfmodule_axial_sensor0
11. module_L3t_halfmodule_stereo_sensor0
12. module_L4b_halfmodule_axial_hole_sensor0
13. module_L4b_halfmodule_axial_slot_sensor0
14. module_L4b_halfmodule_stereo_hole_sensor0
15. module_L4b_halfmodule_stereo_slot_sensor0

16. module_L4t_halfmodule_axial_hole_sensor0
17. module_L4t_halfmodule_axial_slot_sensor0
18. module_L4t_halfmodule_stereo_hole_sensor0
19. module_L4t_halfmodule_stereo_slot_sensor0
20. module_L5b_halfmodule_axial_hole_sensor0
21. module_L5b_halfmodule_axial_slot_sensor0
22. module_L5b_halfmodule_stereo_hole_sensor0
23. module_L5b_halfmodule_stereo_slot_sensor0
24. module_L5t_halfmodule_axial_hole_sensor0
25. module_L5t_halfmodule_axial_slot_sensor0
26. module_L5t_halfmodule_stereo_hole_sensor0
27. module_L5t_halfmodule_stereo_slot_sensor0
28. module_L6b_halfmodule_axial_hole_sensor0
29. module_L6b_halfmodule_axial_slot_sensor0
30. module_L6b_halfmodule_stereo_hole_sensor0
31. module_L6b_halfmodule_stereo_slot_sensor0
32. module_L6t_halfmodule_axial_hole_sensor0
33. module_L6t_halfmodule_axial_slot_sensor0
34. module_L6t_halfmodule_stereo_hole_sensor0
35. module_L6t_halfmodule_stereo_slot_sensor0

For SVT NIM Paper

File: hps_005772.evio.0

Notes: occupancy on edge is the 2nd strip away from the beam

[Strip Occupancies](#)

[Cluster Occupancies](#)

[Root File](#)