

# Implementation of BadChannel exclusion in Strip-like (PSS and SS) sensor

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## Bad strips

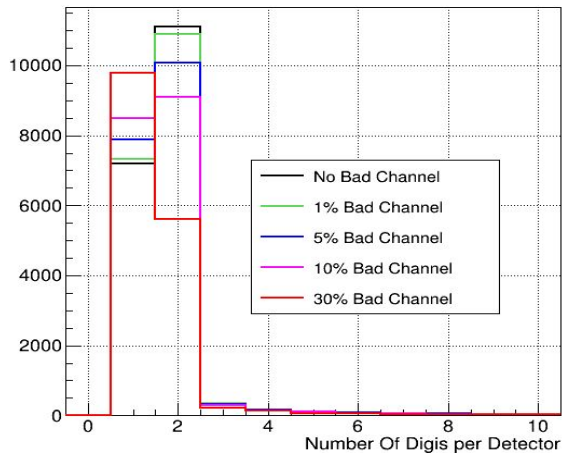
- We will have inefficient or masked channels randomly distributed
- On the sensors we have a limit of  $<1\%$ , but problems might add up
- When do we get problems?
- 1%, 5%, 10% ?

# Software and Sample

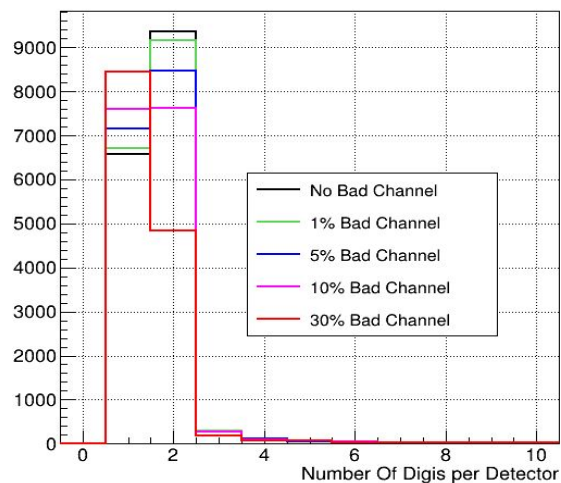
- CMSSW\_12\_4\_X\_2022-04-08-2300
- Condition DB infrastructure from Marco Musich
  - *Pull Request # 37463*
  
- Four Single Muons with Pt 1 - 100 GeV (FourMuExtendedPt\_1\_200\_pythia8\_cfi)
  - Generated privately
    - /eos/cms/store/group/dpg\_tracker\_upgrade/Digitizer/Production/CMSSW124X/GEN\_SIM
  - Digitized
    - /eos/cms/store/group/dpg\_tracker\_upgrade/Digitizer/Production/CMSSW124X/DIGI\_BADChannel
  
- Used FakeESSource (newly created *SiPhase2OTFakeBadStripsESSource*) changing the *badComponentsFraction* parameter for the strip parts (PSS and 2S sensors)
  - 1%
  - 5%
  - 10%
  - 30%

# Number of Digis per Detector Module

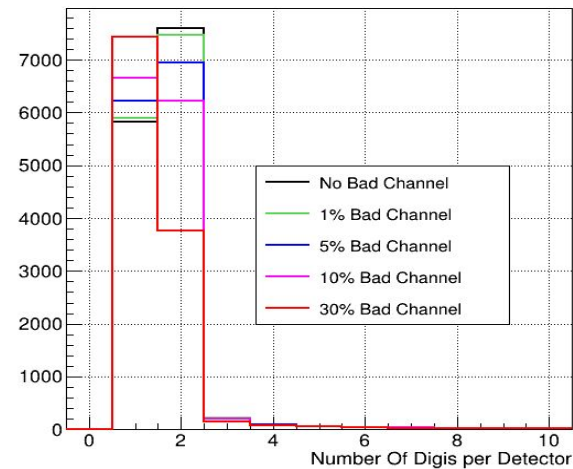
## Layer 4



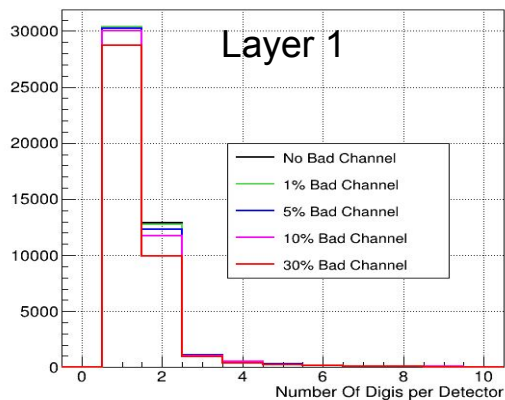
## Layer 5



## Layer 6



## Layer 1



No Bad Channel

1% Bad Channels

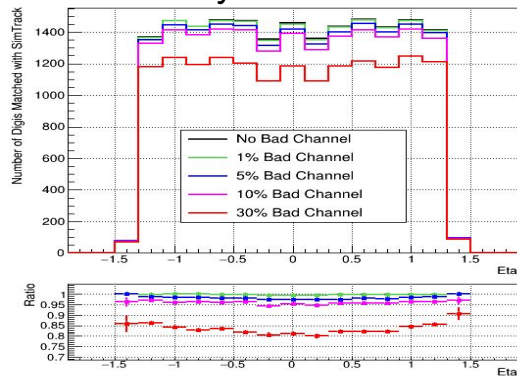
5% Bad Channels

10% Bad Channels

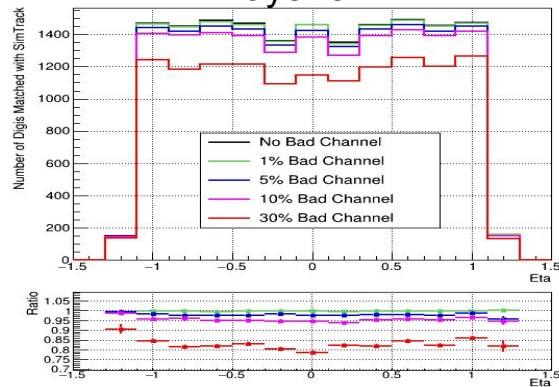
30% Bad Channels

# Matched Digis as a function of Eta

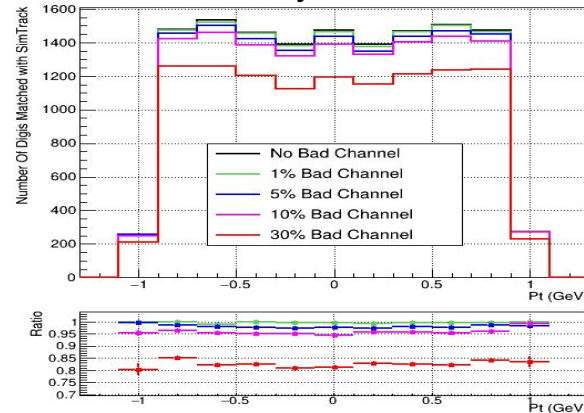
## Layer 4



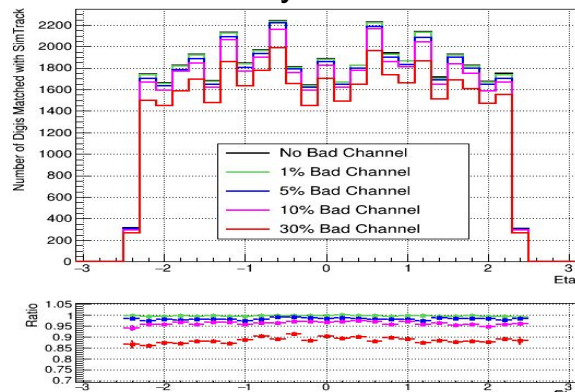
## Layer 5



## Layer 6



## Layer 1

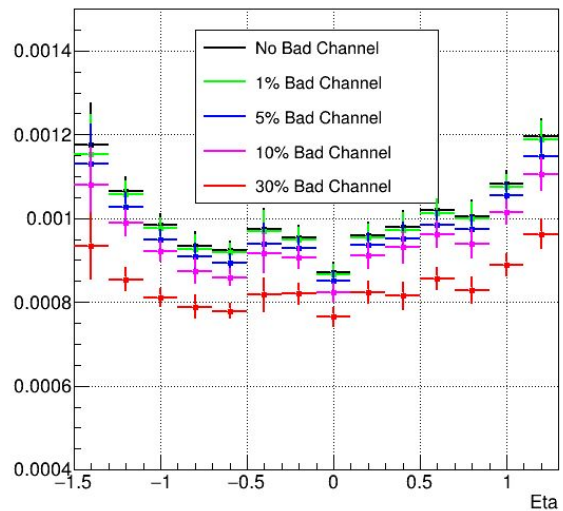


Note : PSP and PSS modules are not separated in this plot

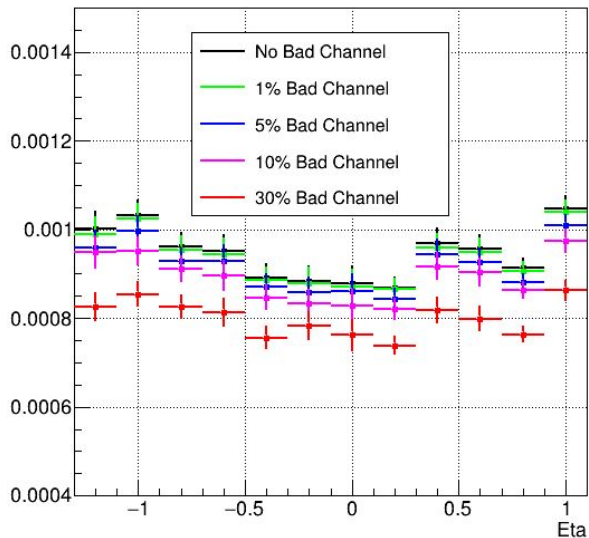
|                  |      |
|------------------|------|
| No Bad Channels  | -    |
| 1% Bad Channels  | 0.5% |
| 5% Bad Channels  | 2%   |
| 10% Bad Channels | 5%   |
| 30% Bad Channels | 20%  |

# Occupancy in 2S Layers

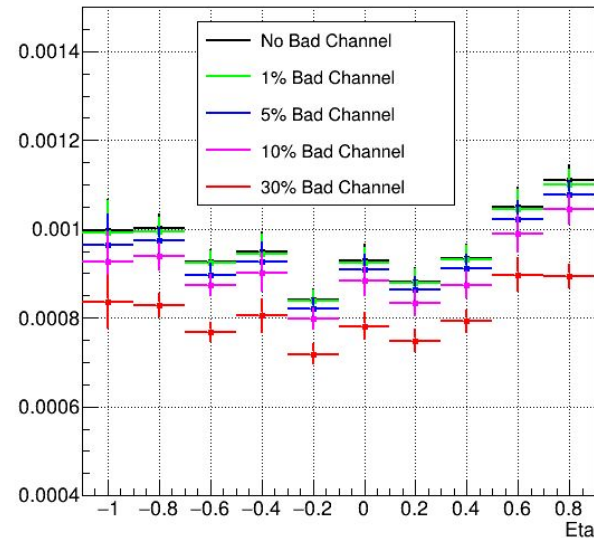
## Layer 4



## Layer 5

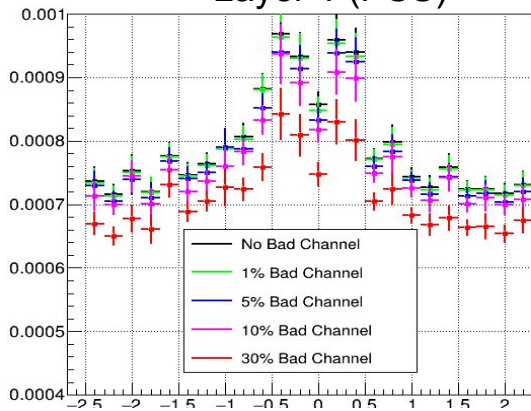


## Layer 6

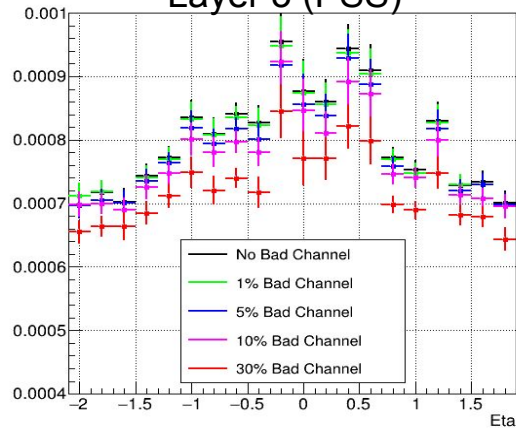


# Occupancy in PS Layers

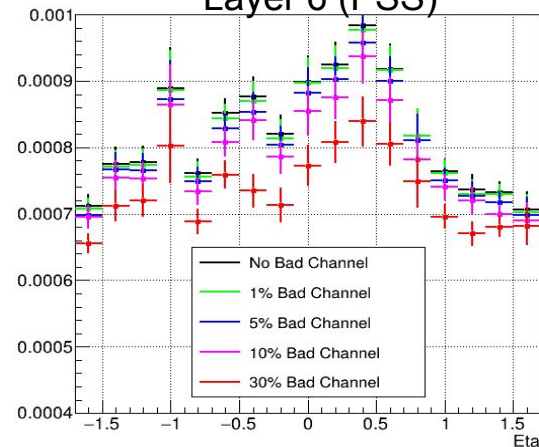
## Layer 1 (PSS)



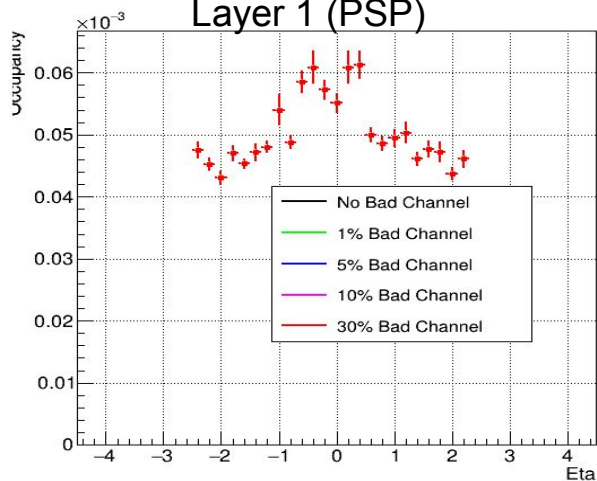
## Layer 3 (PSS)



## Layer 6 (PSS)



## Layer 1 (PSP)



Note : no change  
as expected