

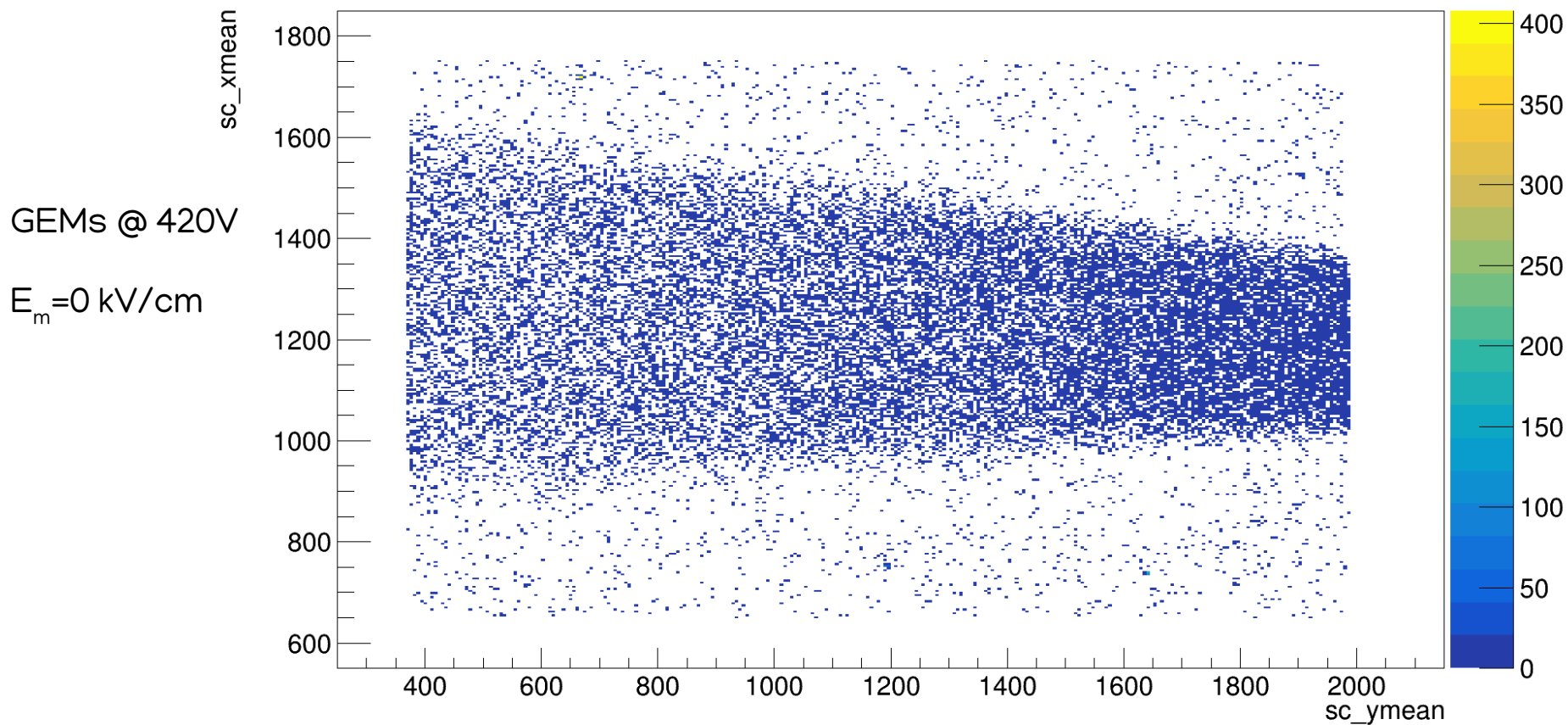


MANGO DATA ANALYSES

G. Dho, E. Baracchini, A. Cortez

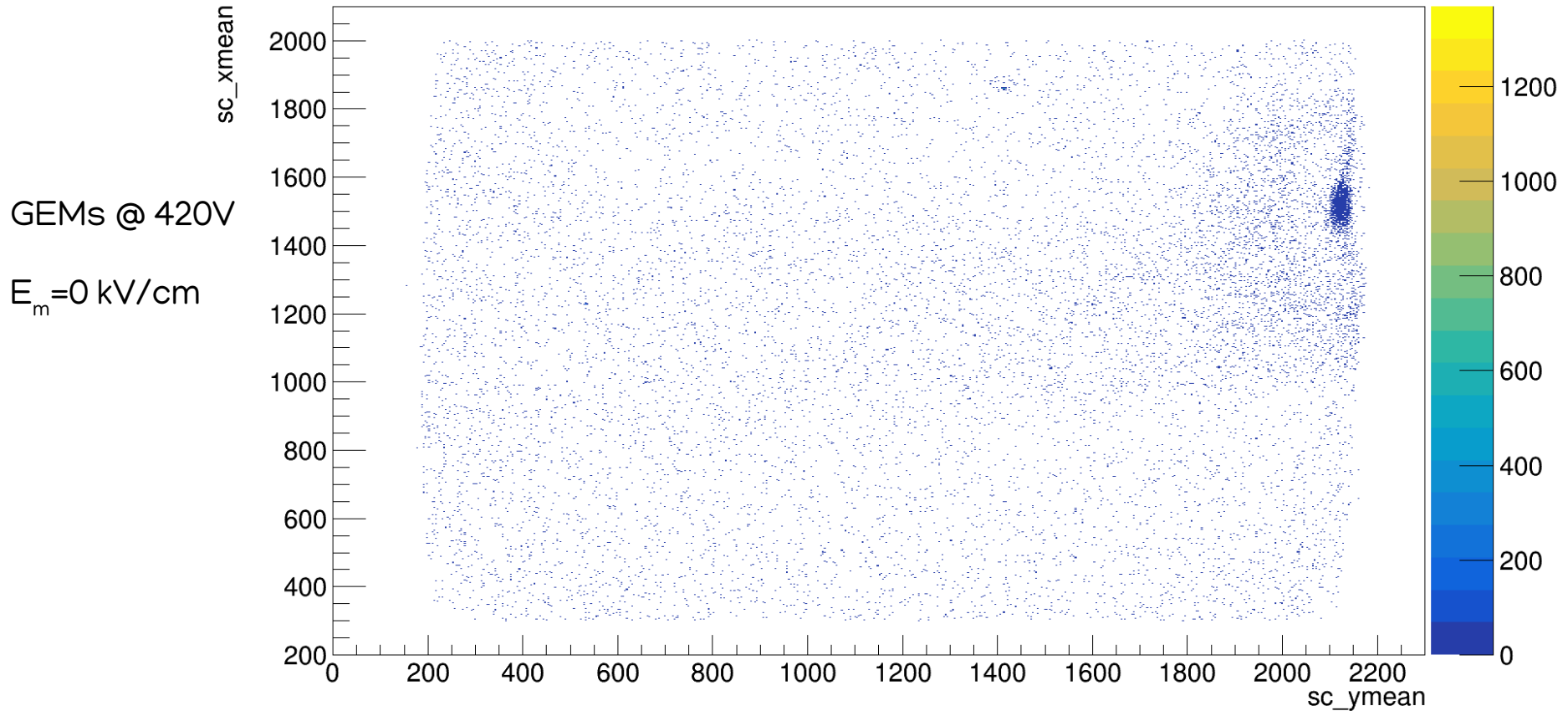
OLD IRON 27TH NOVEMBER

sc_xmean:sc_ymean {(sc_xmean>650 && sc_xmean<1750) && (sc_ymean>370 && sc_ymean<2100)}



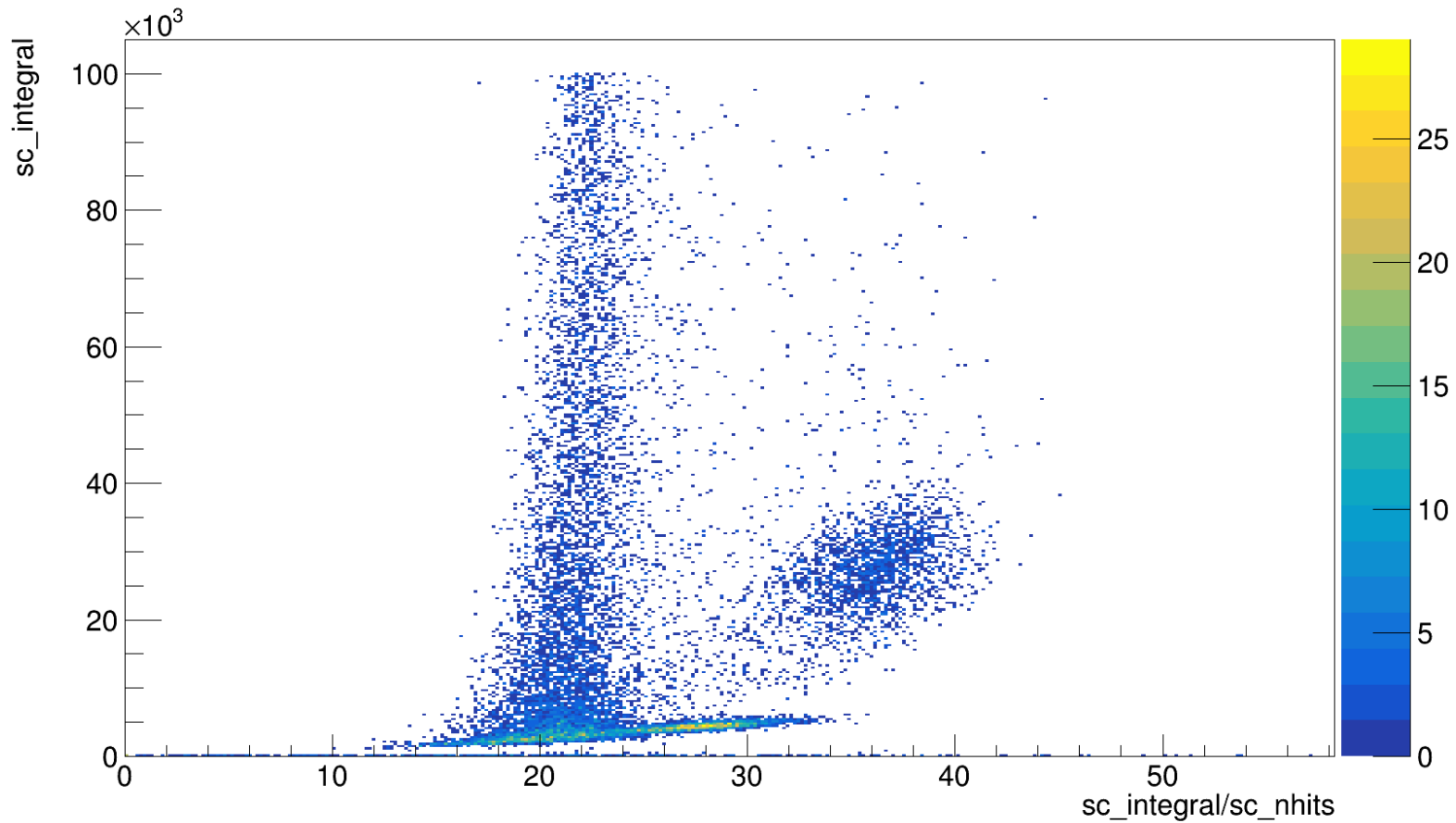
NEW IRON 21ST DECEMBER

sc_xmean:sc_ymean {sc_xmean>300 && sc_xmean<2000 &&sc_ymean>150 && sc_ymean<2200}



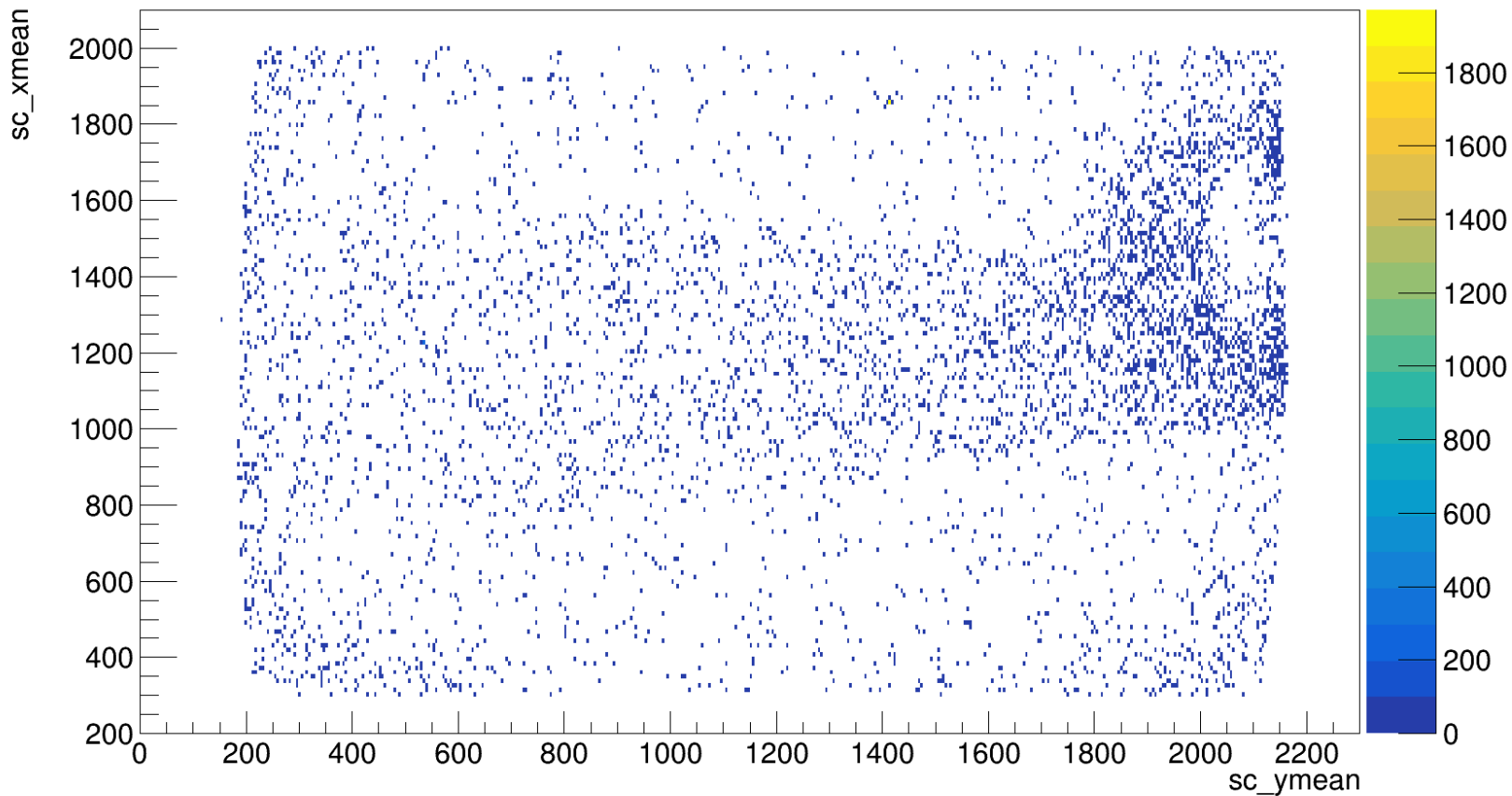
NEW IRON 21ST DECEMBER

sc_integral:sc_integral/sc_nhits {sc_xmean>300 && sc_xmean<2000 &&sc_ymean>150 && sc_ymean<2200 && sc_integral>0 && sc_integral<100000}

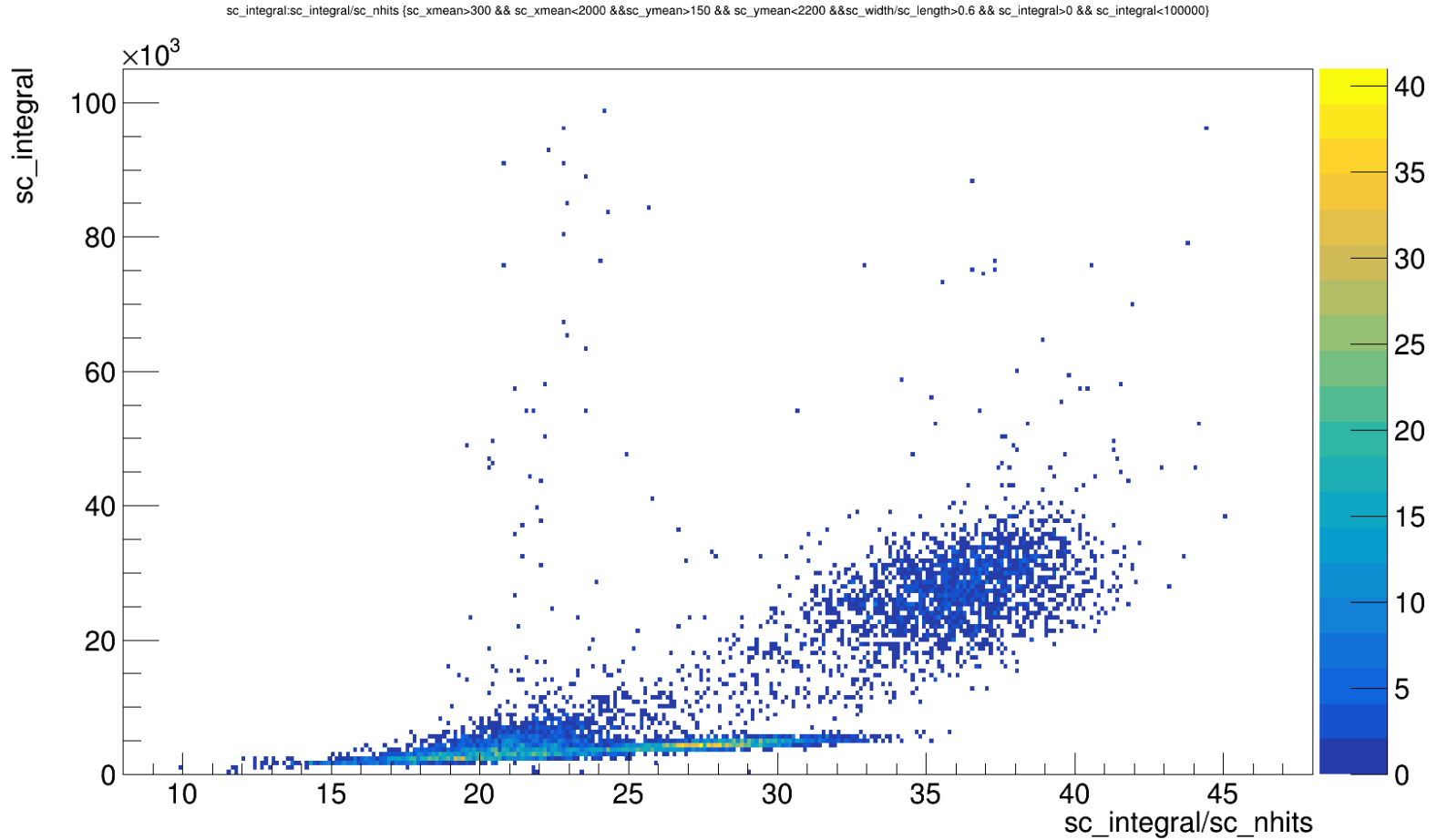


NEW IRON 21ST DECEMBER SLIMNESS > 0,6

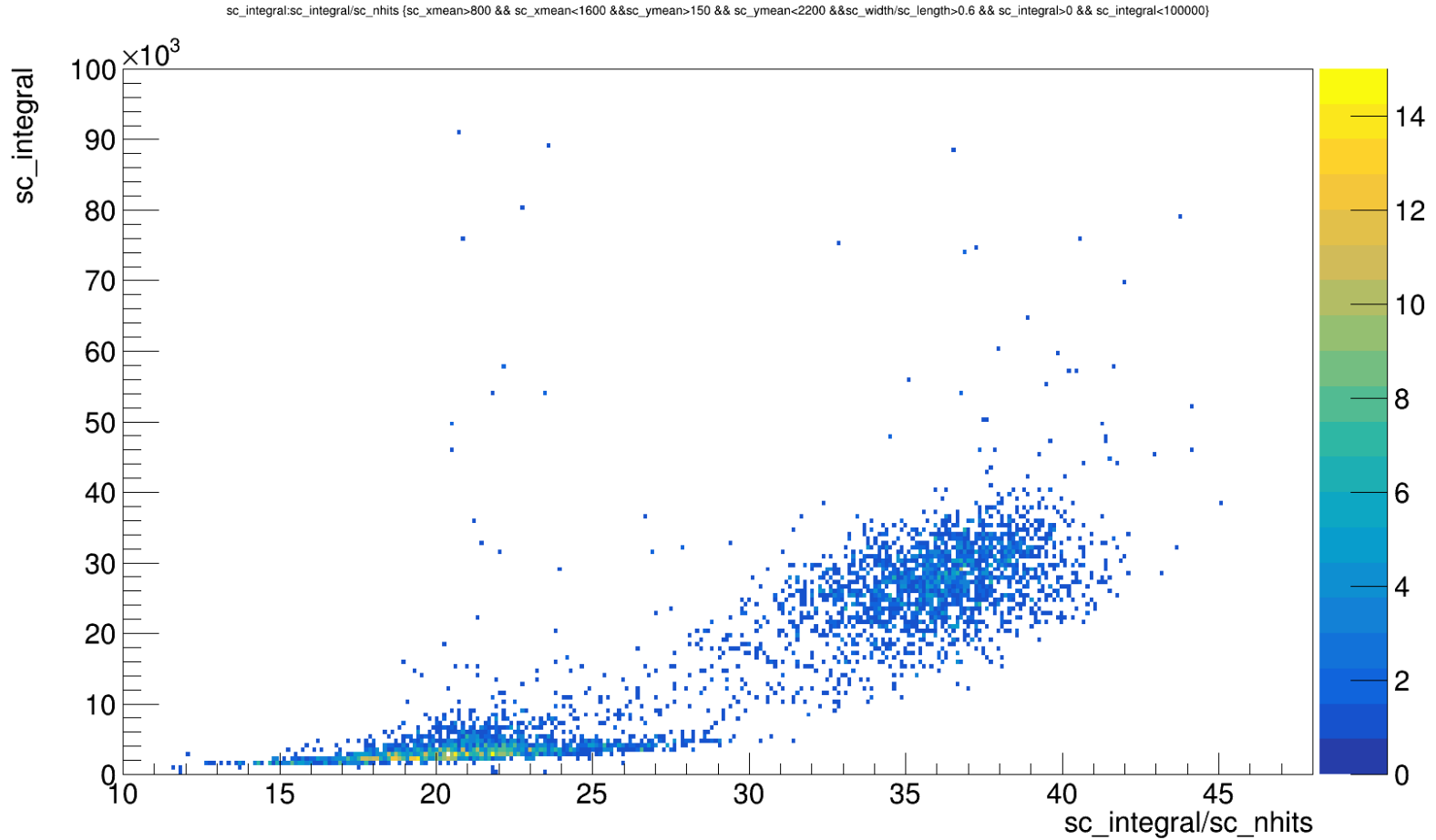
sc_xmean:sc_ymean {sc_xmean>300 && sc_xmean<2000 && sc_ymean>150 && sc_ymean<2200 && sc_width/sc_length>0.6 && sc_integral>0 && sc_integral<100000}



NEW IRON 21ST DECEMBER SLIMNESS > 0,6

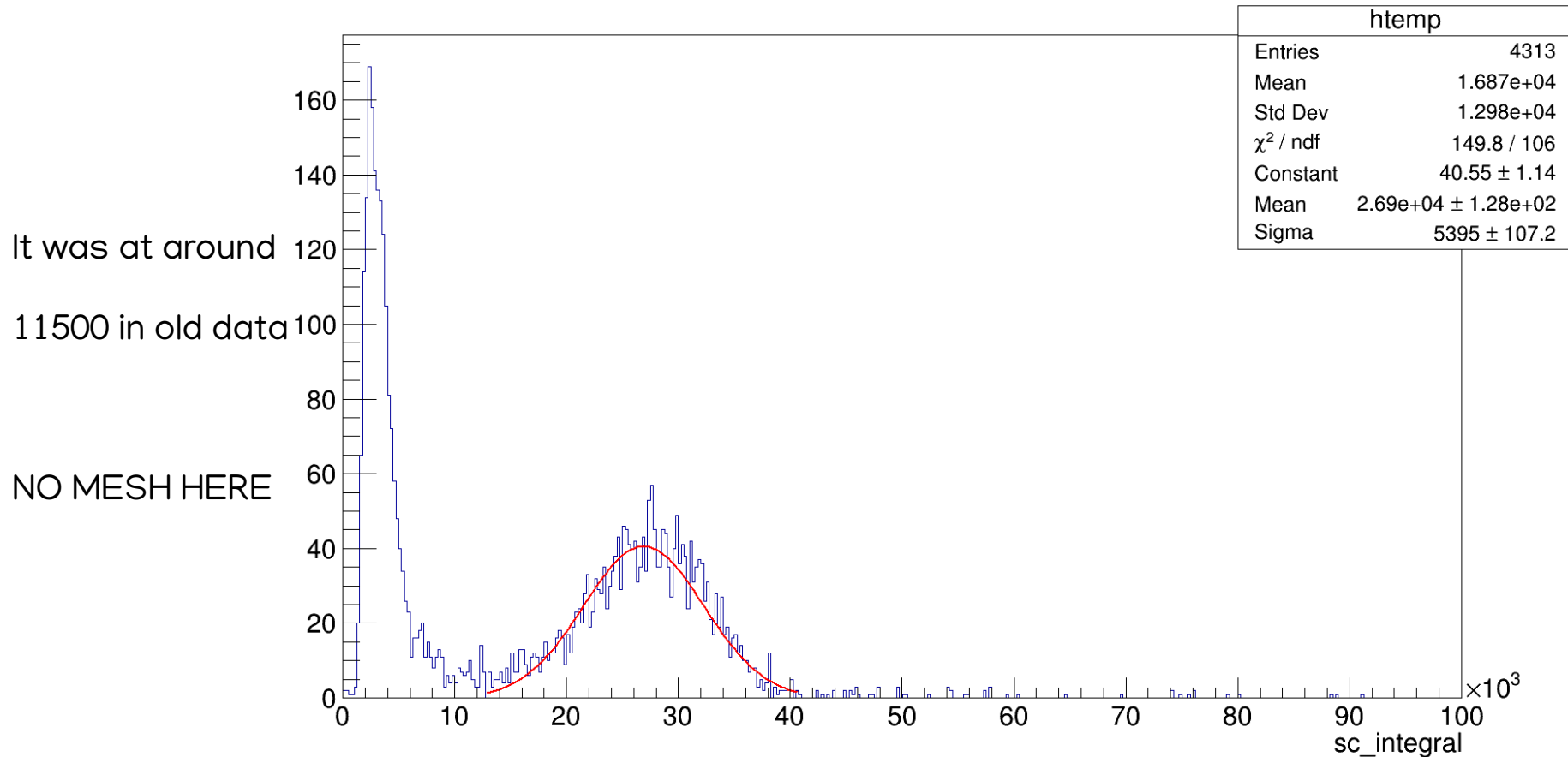


NEW IRON 21ST DECEMBER SLIMNESS $>0,6$ $800 <x < 1600$



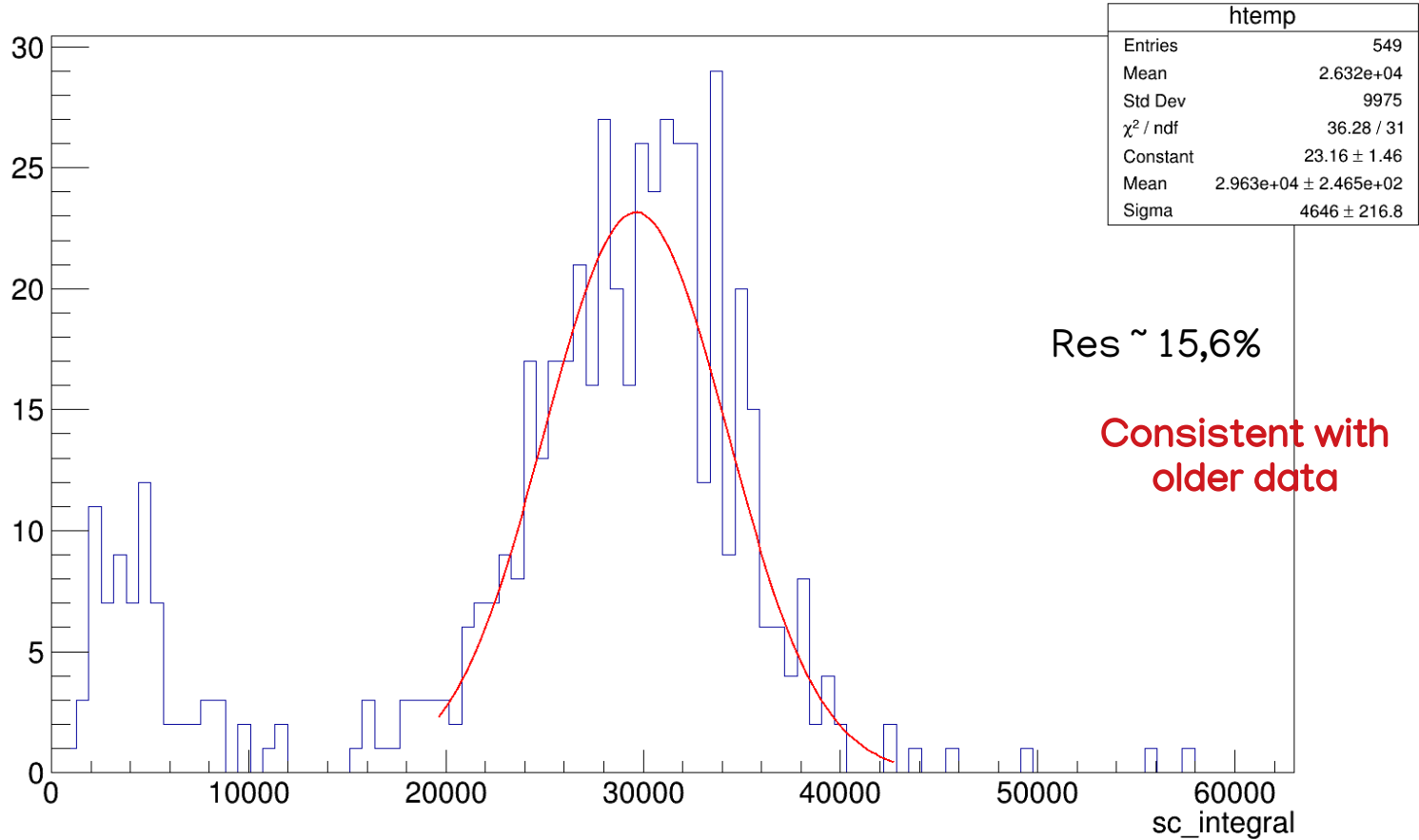
NEW IRON 21ST DECEMBER SLIMNESS $>0,6$ $800 <x < 1600$

sc_integral (sc_xmean>800 && sc_xmean<1600 && sc_ymean>150 && sc_ymean<2200 && sc_width/sc_length>0.6 && sc_integral>0 && sc_integral<100000)



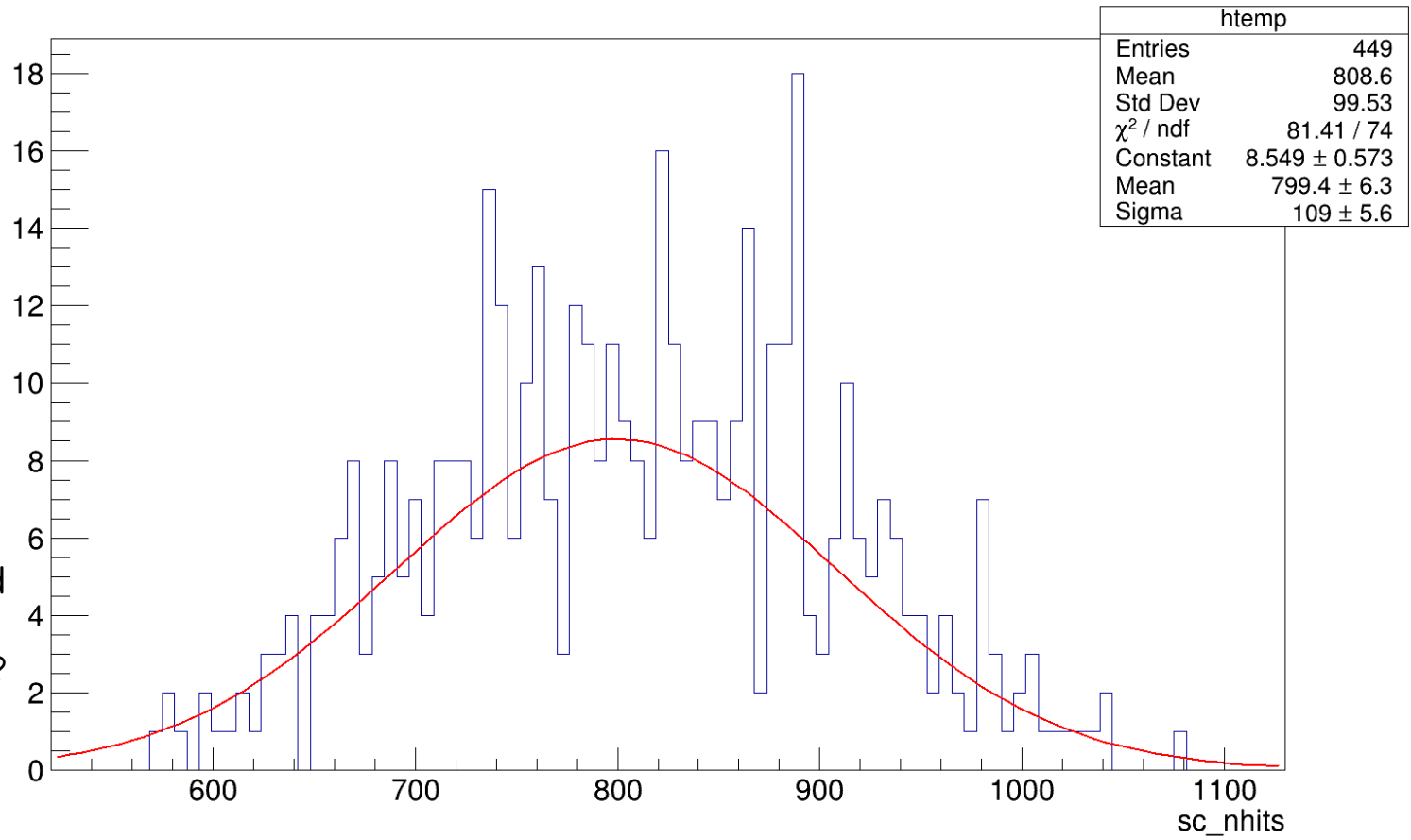
NEW IRON 21ST DECEMBER SLIMNESS > 0,6 VERYCENTRE

sc_integral (sc_xmean>800 && sc_xmean<1600 && sc_ymean>150 && sc_ymean<2200 && sc_width/sc_length>0.6 && sc_integral>0 && sc_integral<100000 && sc_ymean>950 && sc_ymean<1350)



NEW IRON 21ST DECEMBER SLIMNESS $>0,6$ VERYCENTRE E_{IRONPEAK}

sc_nhits (sc_xmean>800 && sc_xmean<1600 &&sc_ymean>150 && sc_ymean<2200 &&sc_width/sc_length>0.6 && sc_integral>20000 && sc_integral<40000 && sc_ymean>950 && sc_ymean<1350)



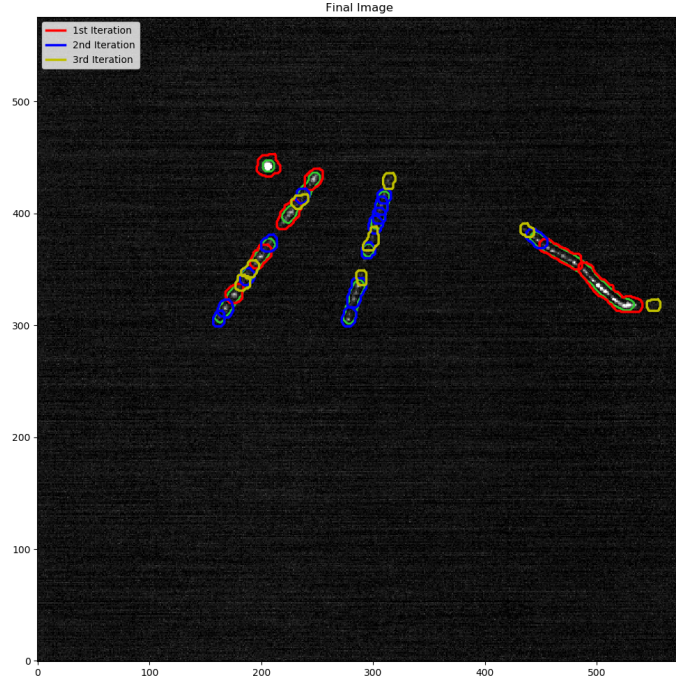
It was at around

600

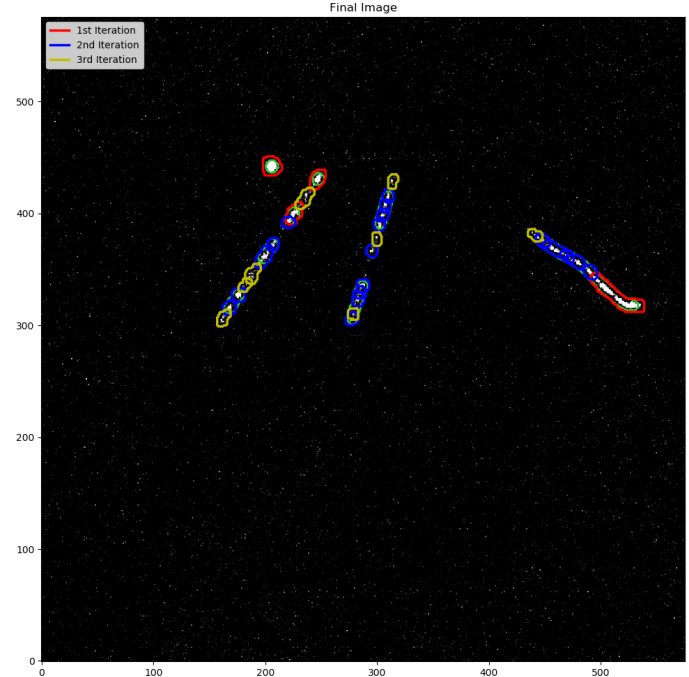


Is this connected
to the resolution?

BARIUM (10MS) PROBLEMS IN RECO

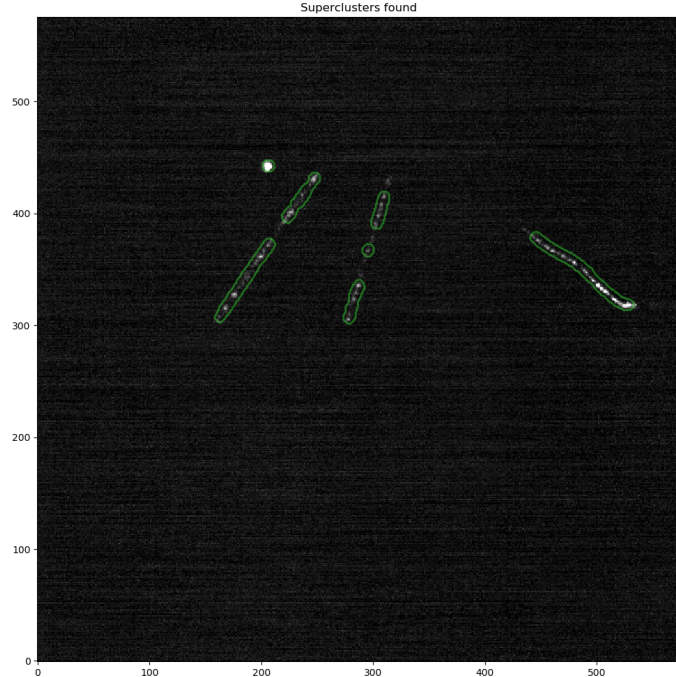


ConfigFile.txt
line 51 [1, 4.5, 2, 4]
line 36 2.3
supercluster.py
line 59 threshold=0.5

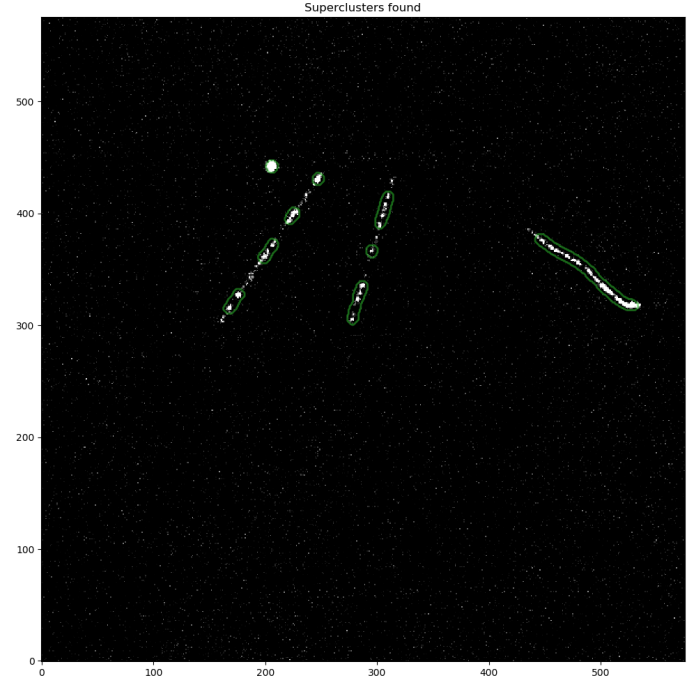


ConfigFile.txt
line 51 [1, 4.5, 2, 4]
line 36 2.3
supercluster.py
line 59 threshold=0.5

BARIUM (10MS) PROBLEMS IN RECO

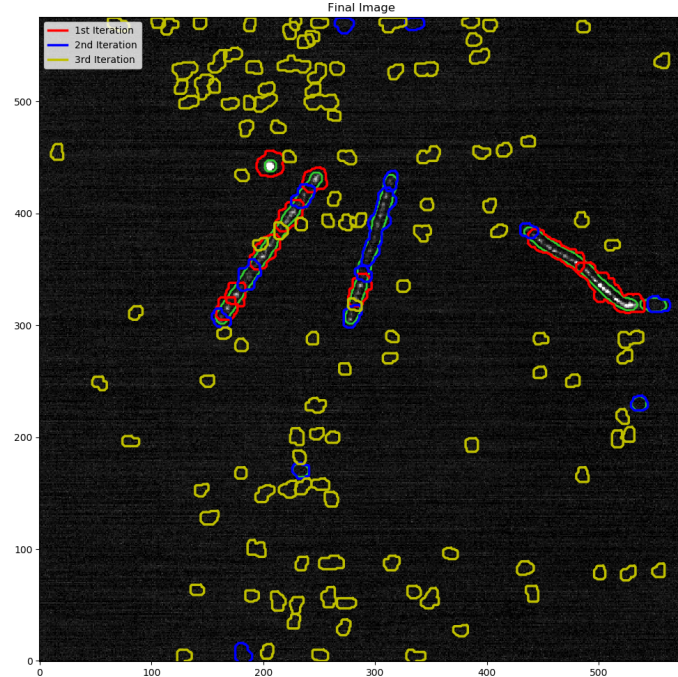


ConfigFile.txt
line 51 [1, 4.5, 2, 4]
line 36 2.3
supercluster.py
line 59 threshold=0.5

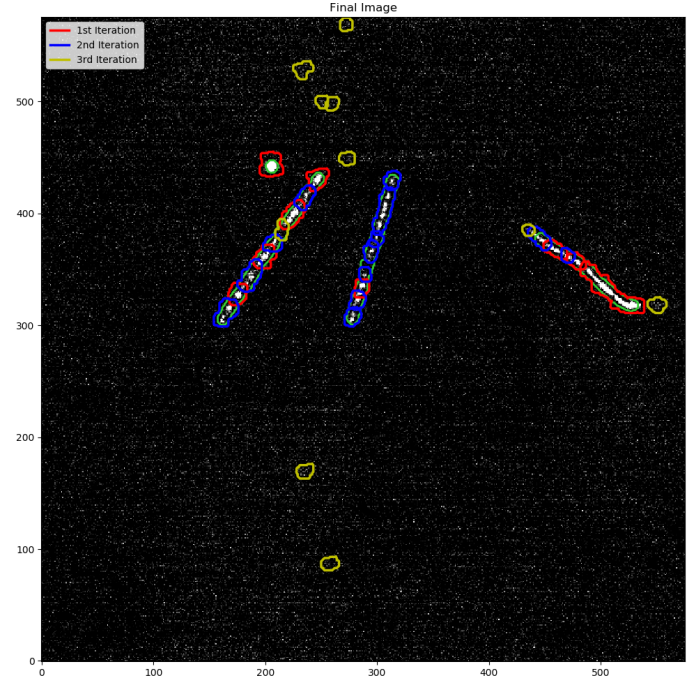


ConfigFile.txt
line 51 [1, 4.5, 2, 4]
line 36 2.3
supercluster.py
line 59 threshold=0.5

BARIUM (10MS) PROBLEMS IN RECO

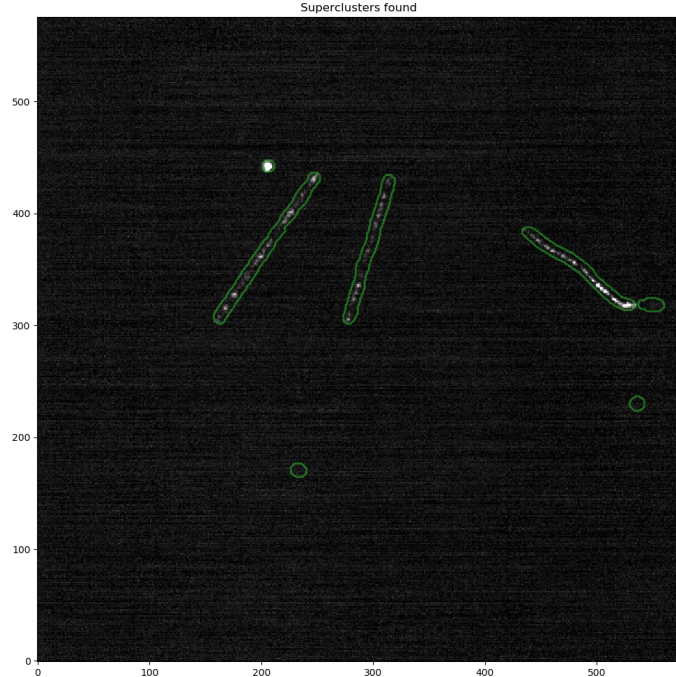


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,8
supercluster.py
line 59 threshold=0.6

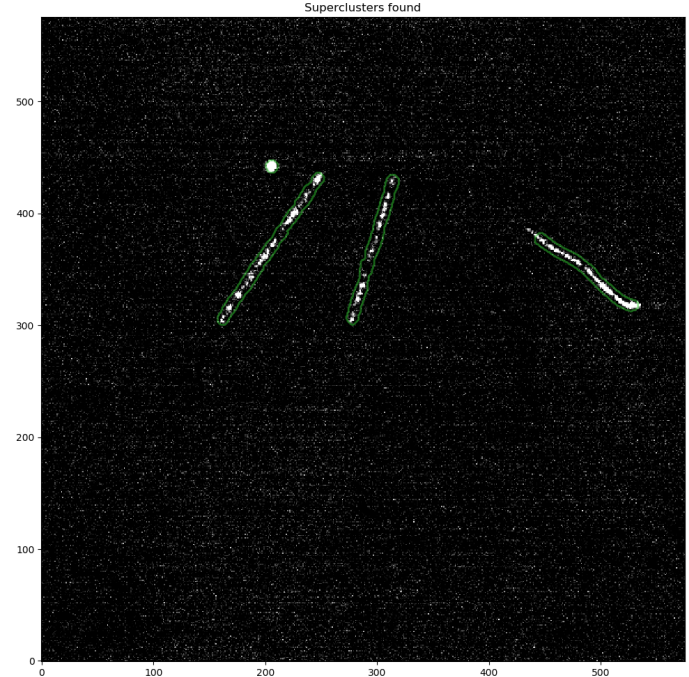


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,5
supercluster.py
line 59 threshold=0.6

BARIUM (10MS) PROBLEMS IN RECO

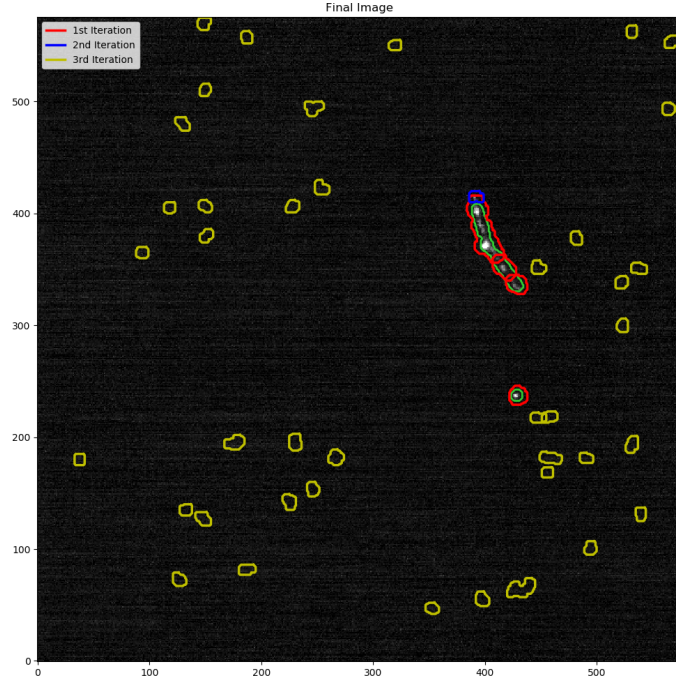


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,8
supercluster.py
line 59 threshold=0.6

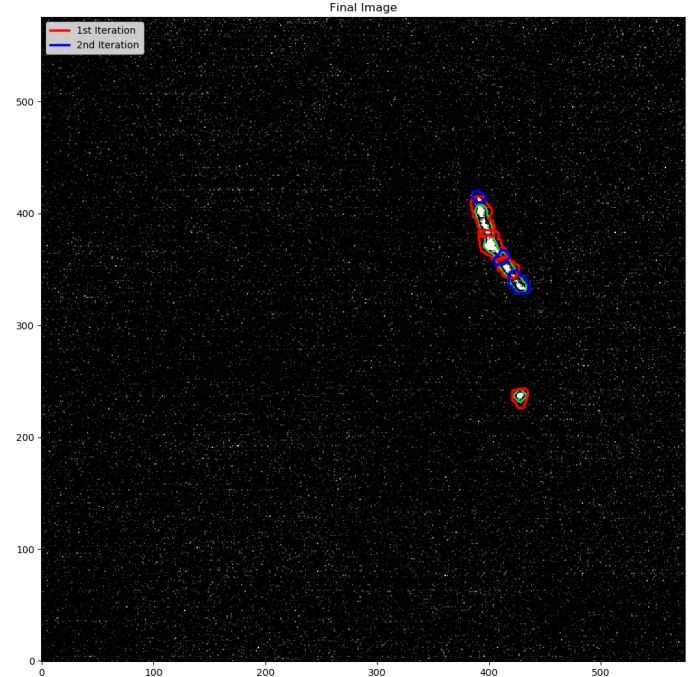


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,5
supercluster.py
line 59 threshold=0.6

BARIUM (10MS) PROBLEMS IN RECO

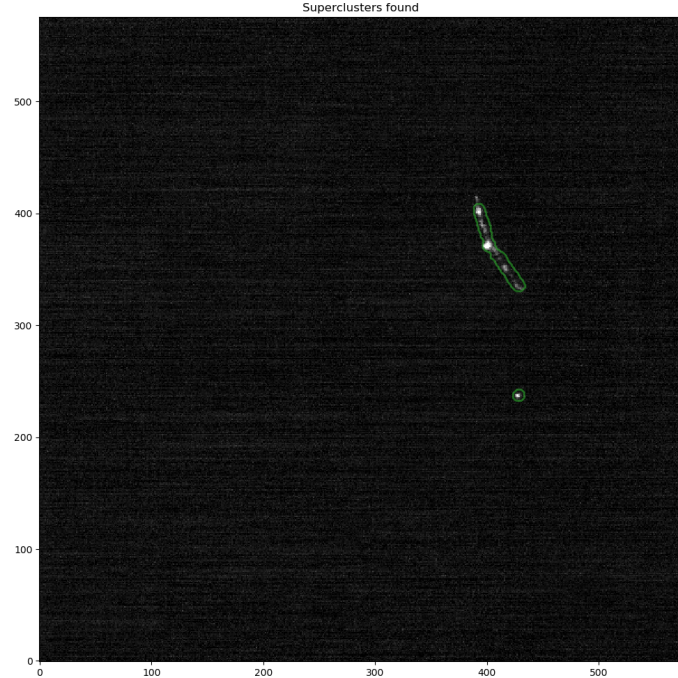


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,8
supercluster.py
line 59 threshold=0.6

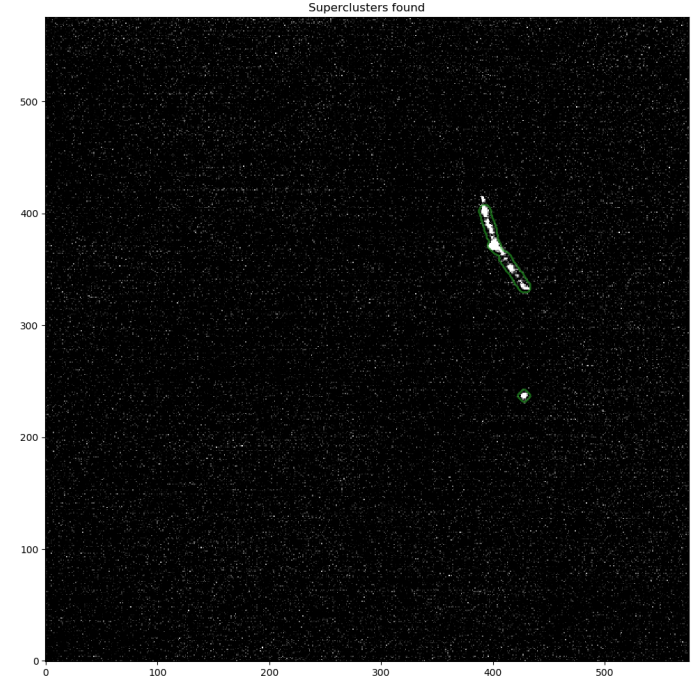


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,5
supercluster.py
line 59 threshold=0.6

BARIIUM (10MS) PROBLEMS IN RECO

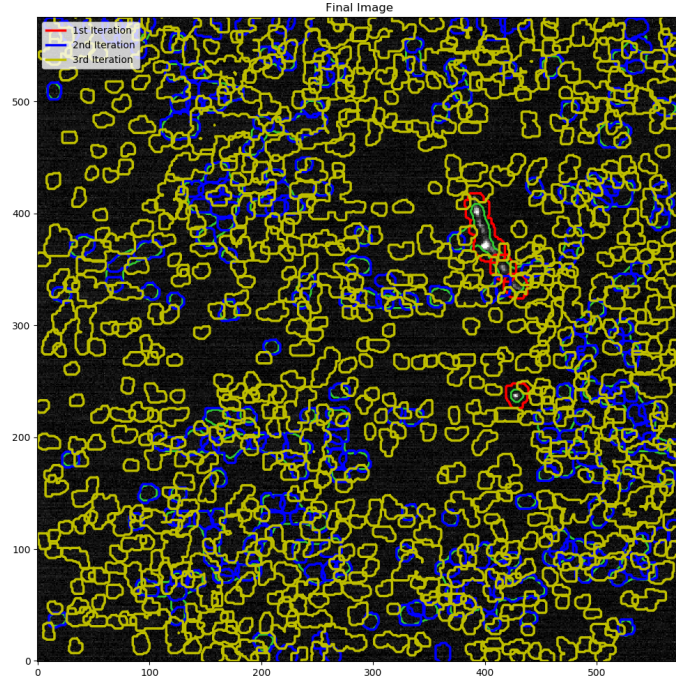


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,8
supercluster.py
line 59 threshold=0.6

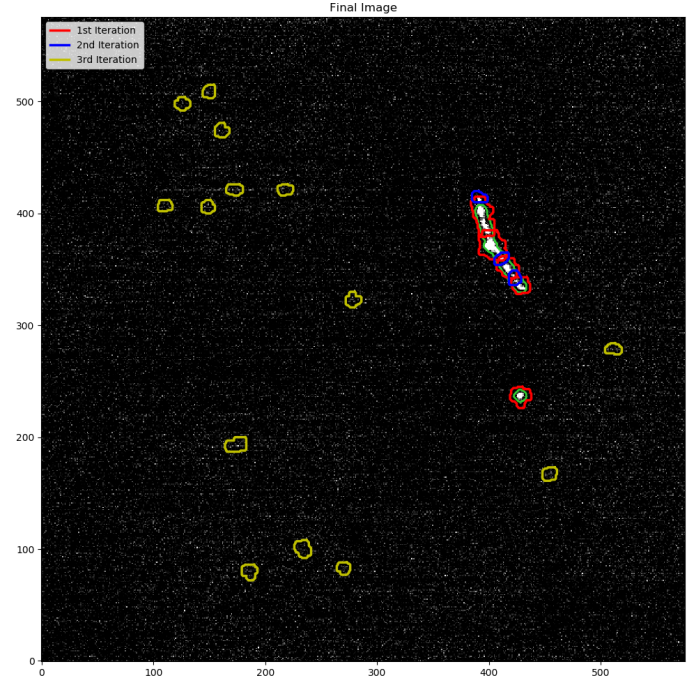


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,5
supercluster.py
line 59 threshold=0.6

BARIUM (10MS) PROBLEMS IN RECO

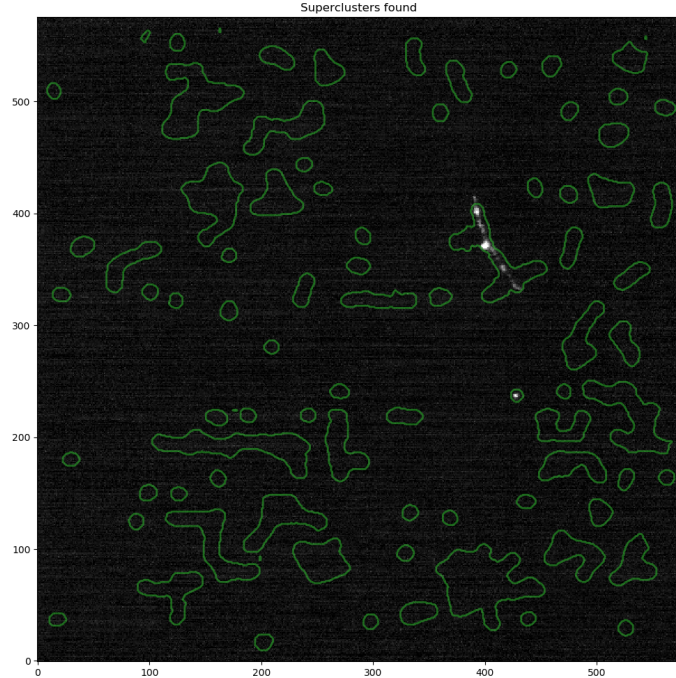


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,5
supercluster.py
line 59 threshold=0.6

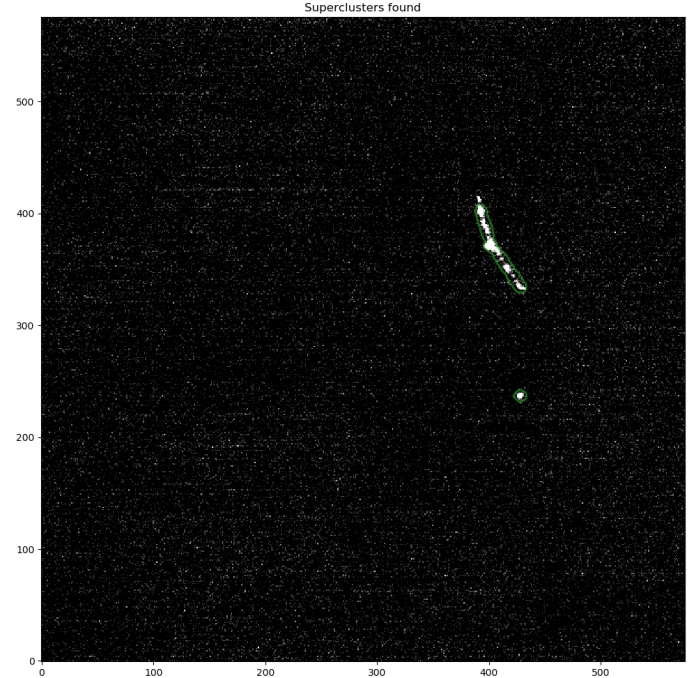


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,3
supercluster.py
line 59 threshold=0.6

BARIUM (10MS) PROBLEMS IN RECO



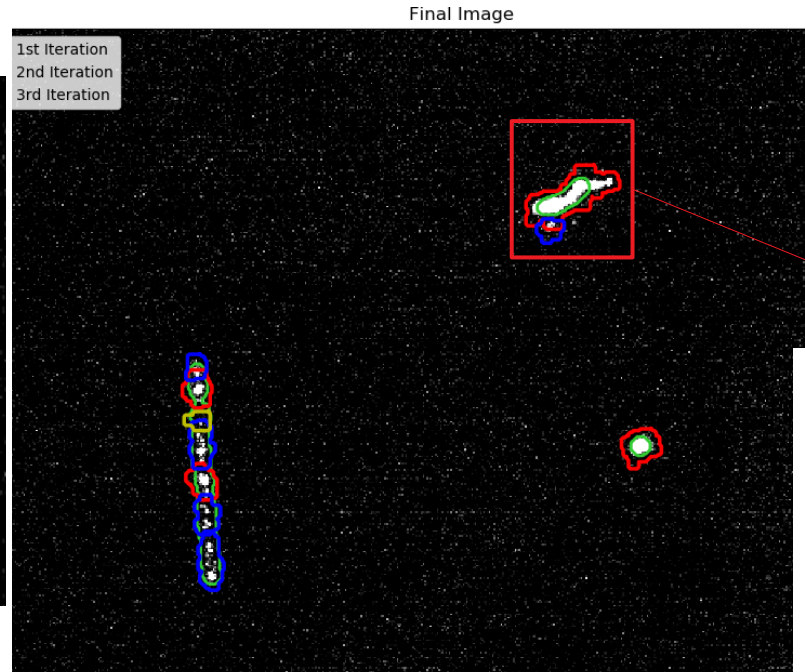
ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,5
supercluster.py
line 59 threshold=0.6



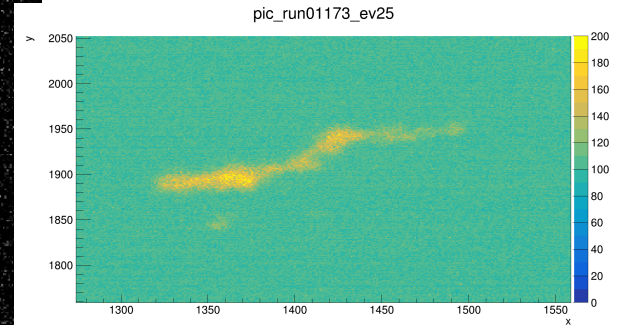
ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,3
supercluster.py
line 59 threshold=0.6

BARIUM (10MS) PROBLEMS IN RECO

Now only the new version of the code

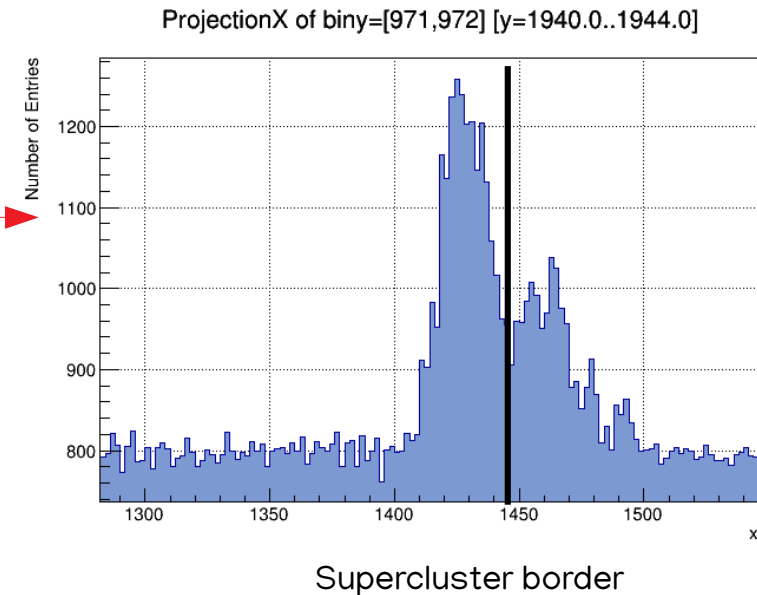
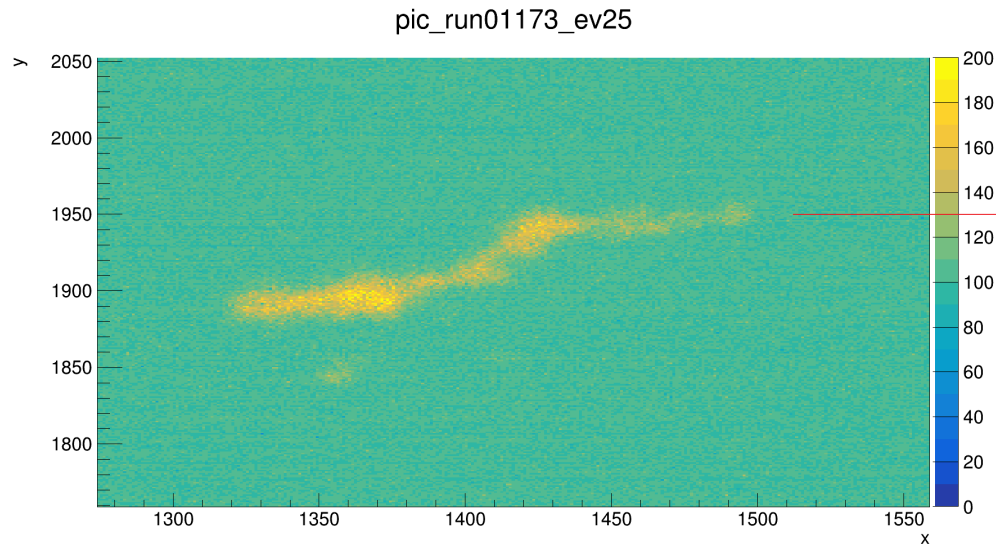


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
Line 36 1,5
supercluster.py
line 59 threshold=0.6



BARIUM (10MS) PROBLEMS IN RECO

It seems the code finds the borders strictly looking at the derivative, but not on the intensity of the pixels

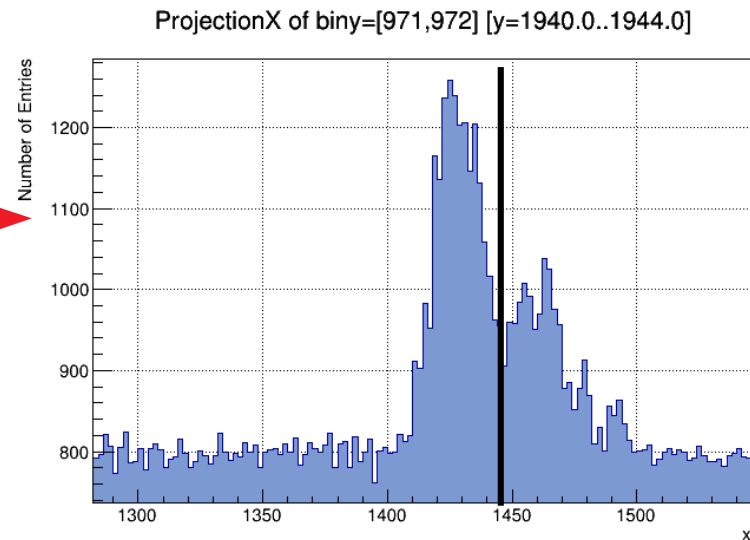
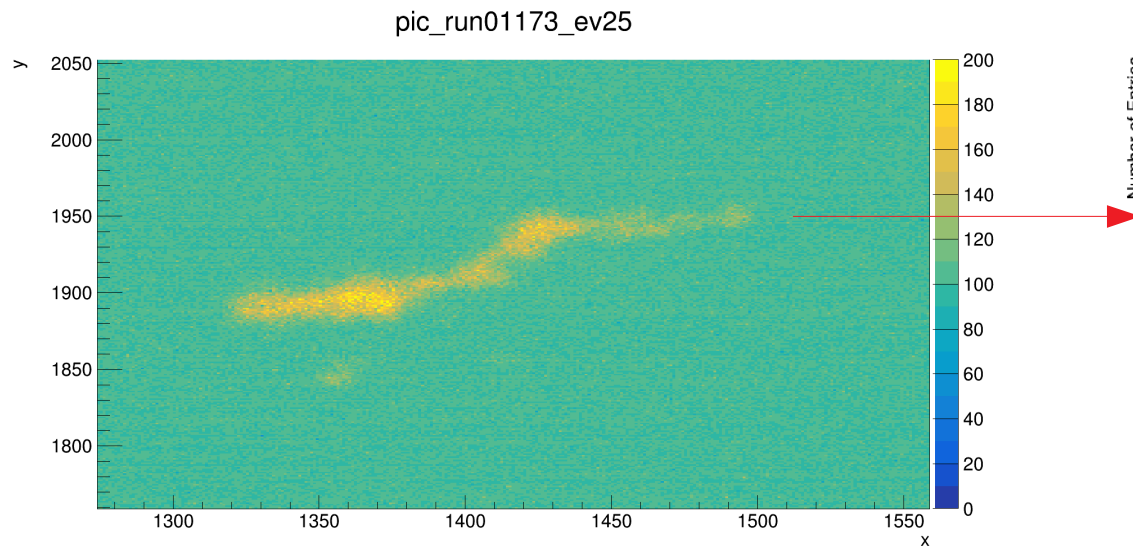


- We saw two options:
 - New type of code

Add a control on signal level within the GAC

BARIUM (10MS) PROBLEMS IN RECO

It seems the code finds the borders strictly looking at the derivative, but not on the intensity of the pixels



- We saw two options:

New type of code



Add a control on signal level within the GAC

BARIUM (10MS) PROBLEMS IN RECO

We found an alternative function in morphsnakes.py that should be better with shapes without clear border

We played with parameters;

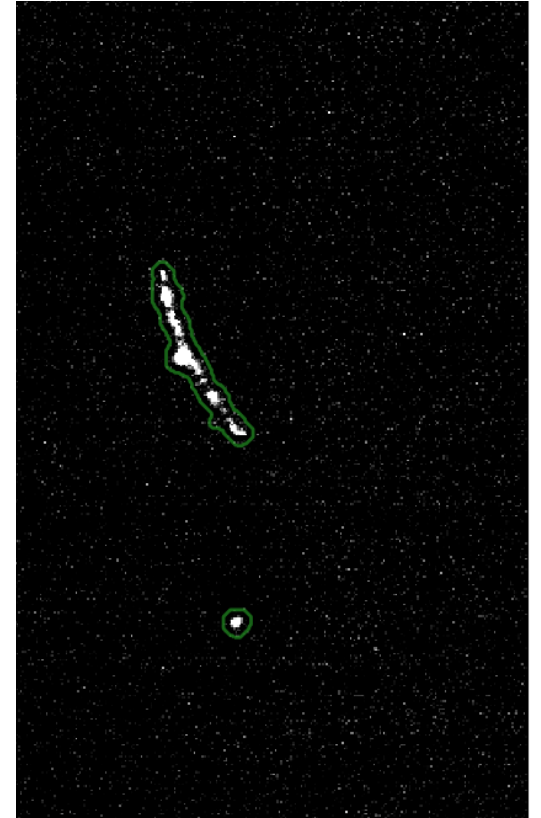
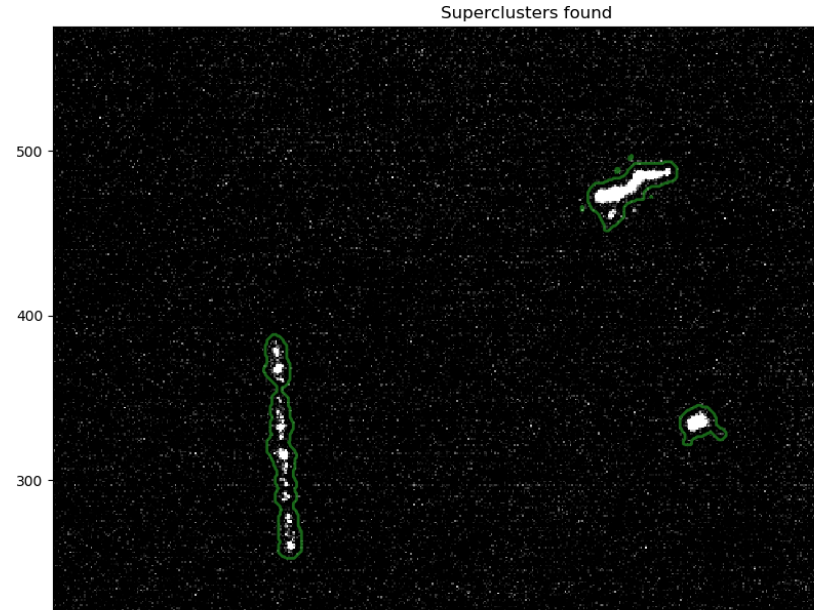
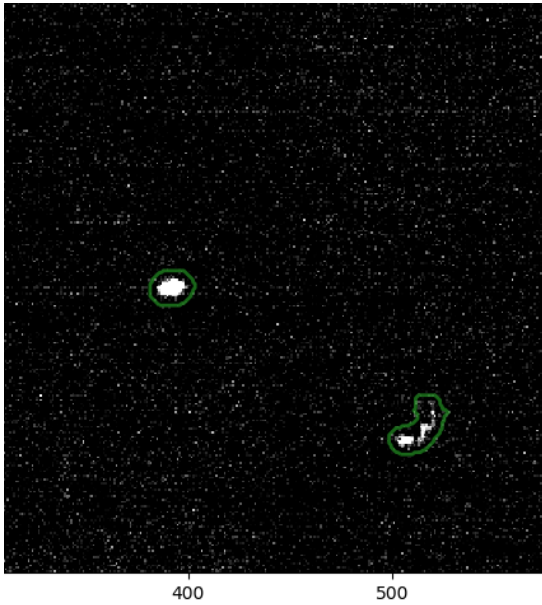
```
# Setting environments parameters
'numPedEvents'      : -1,
'pedExclRegion'    : None,
'rebin'             : 4,
'nsigma'            : 1.8,
'cimax'             : 300,
'justPedestal'     : False,
'daq'               : 'midas',
'type'              : 'neutrons',
'tag'                : 'Data',
'vignetteCorr'     : True,

'excImages'        : [], #list(range(5))
'min_neighbors_average' : 3.5,
'donotremove'      : False,

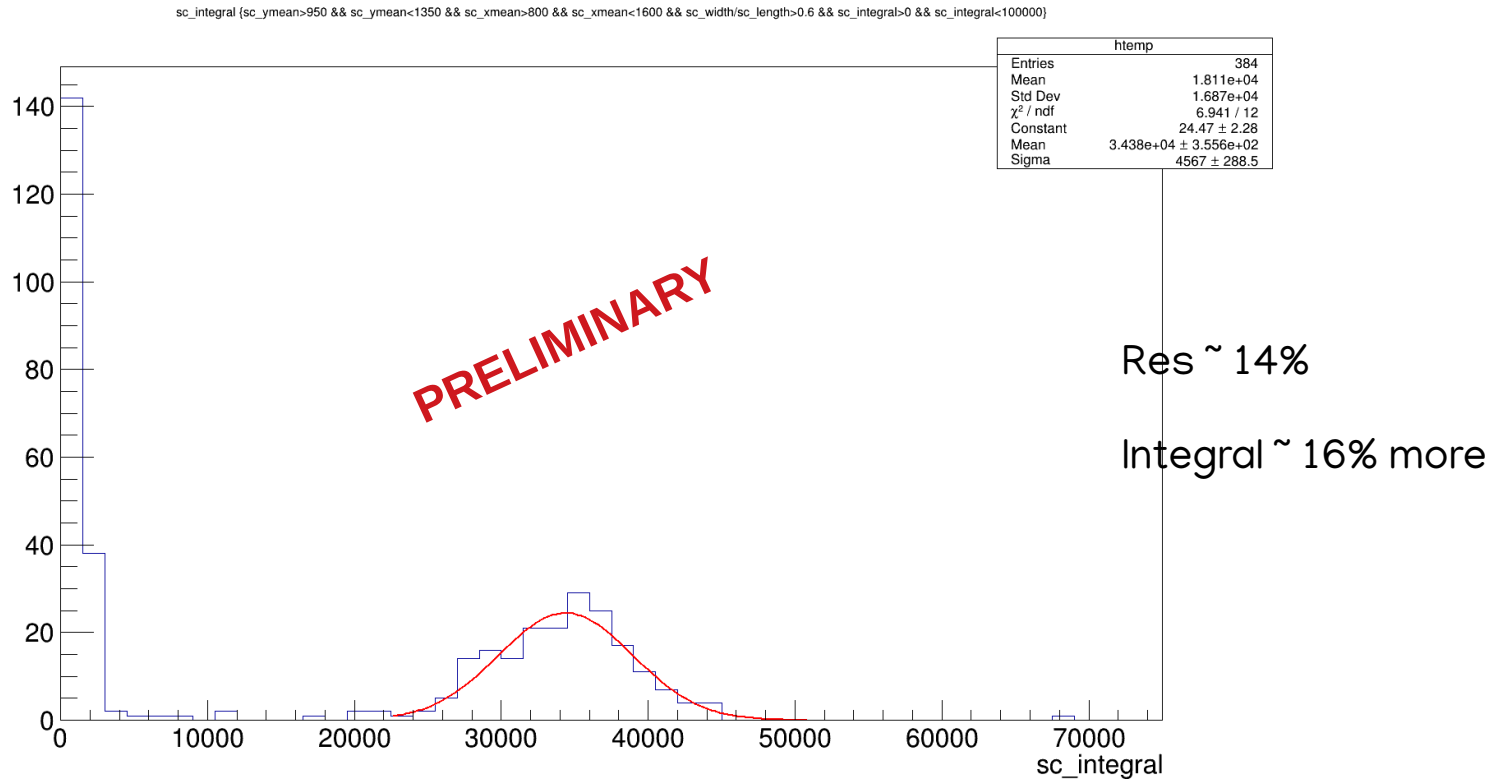
# Setting i2DBSCAN parameters
'iterative'         : 4,
'tip'                : '3D',
'vector_eps'        : [1, 4.5, 3, 4],
'vector_min_samples' : [1, 200, 35, 25],
'cuts'              : [500, 100],
'saturation_corr'   : False,
```

```
def supercluster(self, clustered_data):
    #print ("clu data = ", clustered_data)
    gimage = inverse_gaussian_gradient(clustered_data, 7, 1.7)
    print("Fatto")
    # Initial level set
    # this makes alternate squares active at the first iteration of 10 macro-pixels
    #init_ls = checkerboard_level_set(clustered_data.shape, 10)
    init_ls = np.zeros(clustered_data.shape, dtype=np.int8)
    init_ls[10:-10, 10:-10] = 1
    # List with intermediate results for plotting the evolution
    #evolution = []
    #callback = self.store_evolution_in(evolution)
    #ls = morphological_geodesic_active_contour(gimage, 400, init_ls,
    #                                           # smoothing=1, balloon=-1,
    #                                           # threshold=0.6)
    #                                           #iter_callback=callback)
    ls = morphological_chan_vese(gimage, 400, init_ls,
                                smoothing=1, lambda1=1,
                                lambda2=2.5)
    print("Bene!")
    return ls
```

BARIUM (10MS) PROBLEMS IN RECO



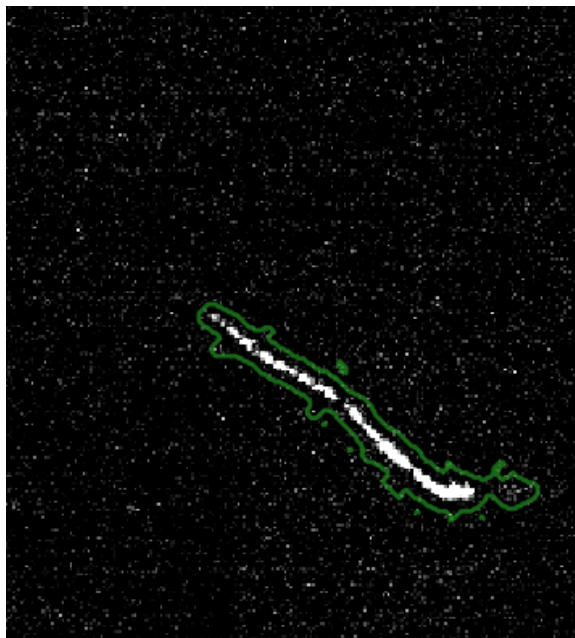
IRON NEW NEW CODE



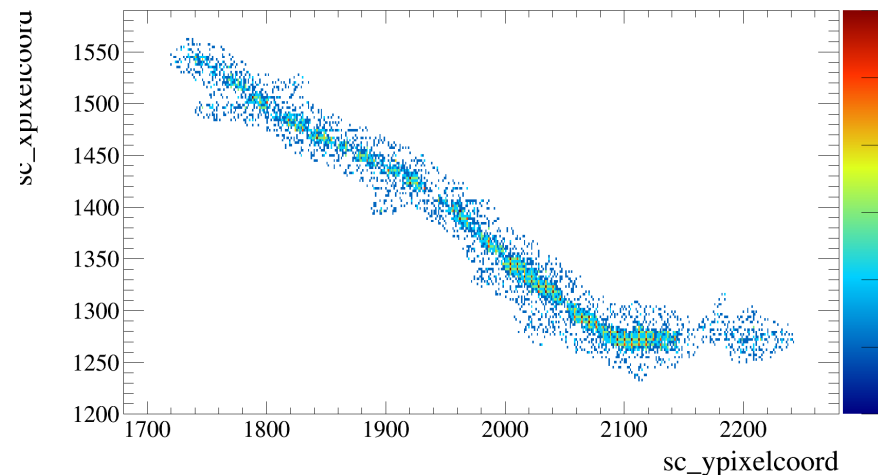
ADDITION OF FULL RESOLUTION SUPERCLUSTERS

- We are trying to add the full resolution information of some superclusters
- Reco files are heavier so the scfullinfo flag is used to select whether to use this feature

```
'numPedEvents' : -1,  
'pedExclRegion' : None,  
'rebin' : 4,  
'nsigma' : 1.5,  
'cimax' : 300,  
'justPedestal' : False,  
'daq' : 'midas',  
'type' : 'neutrons',  
'tag' : 'Data',  
'vignetteCorr' : True,  
'scfullinfo' : True,
```

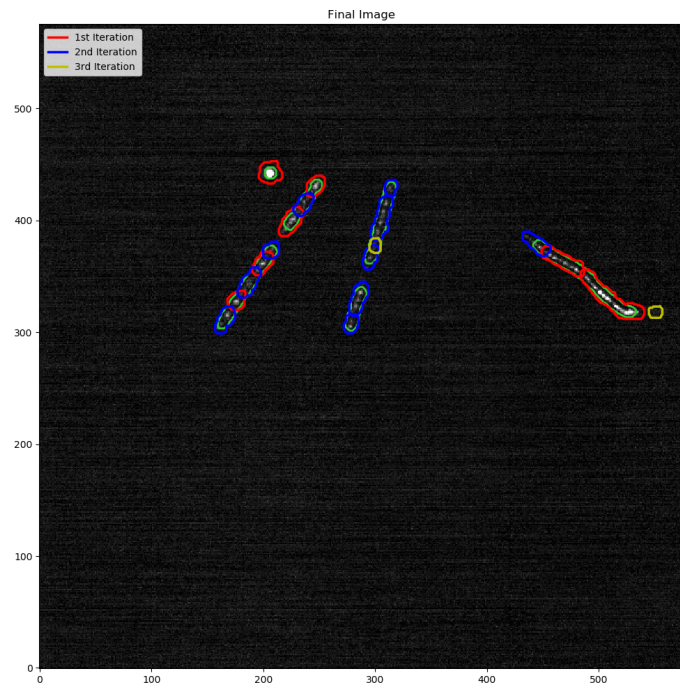


```
root [3] Events->Draw("sc_xpixelcoord:sc_ypixelcoord", "sc_ID==3", "colz")
```

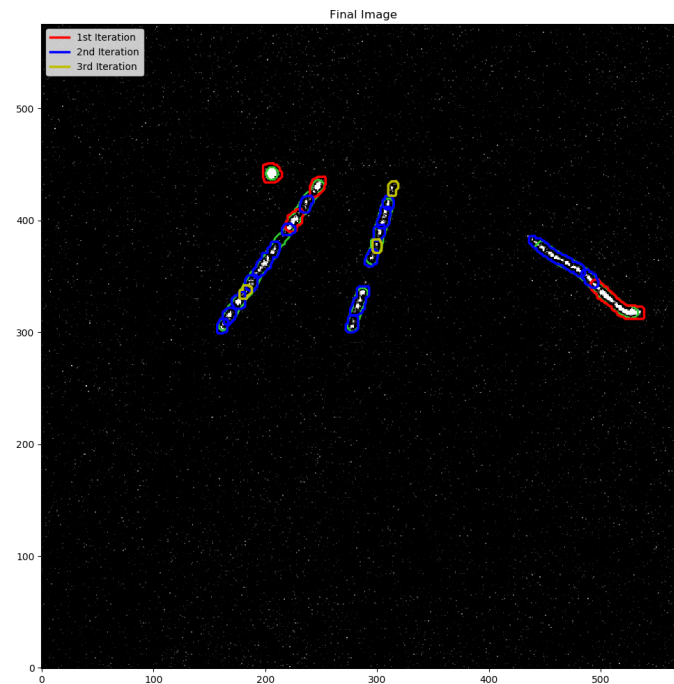


BACKUP

BARIUM (10MS) PROBLEMS IN RECO

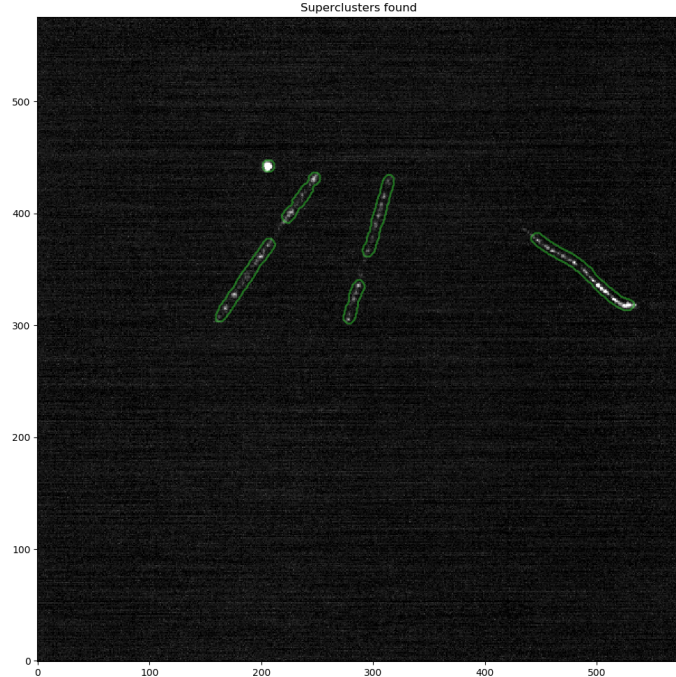


ConfigFile.txt
line 51 [1, 4.5, 3, 4]
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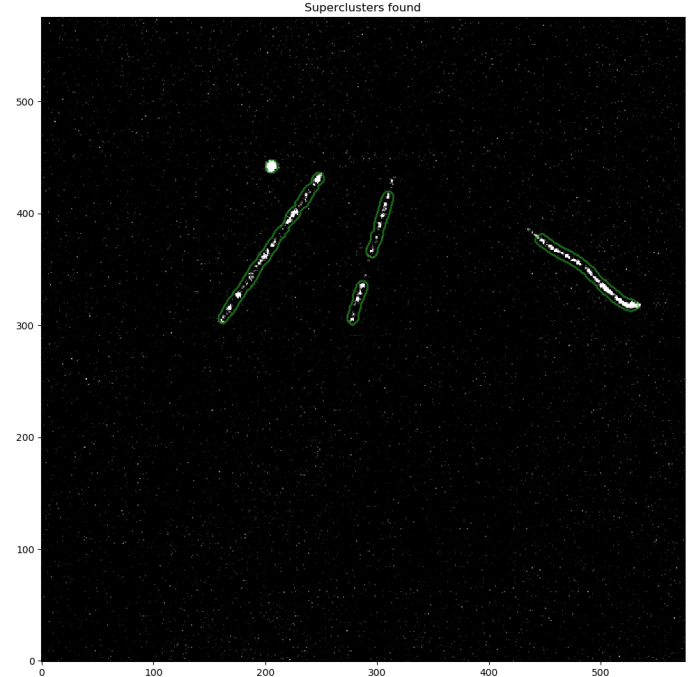


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BARIUM (10MS) PROBLEMS IN RECO

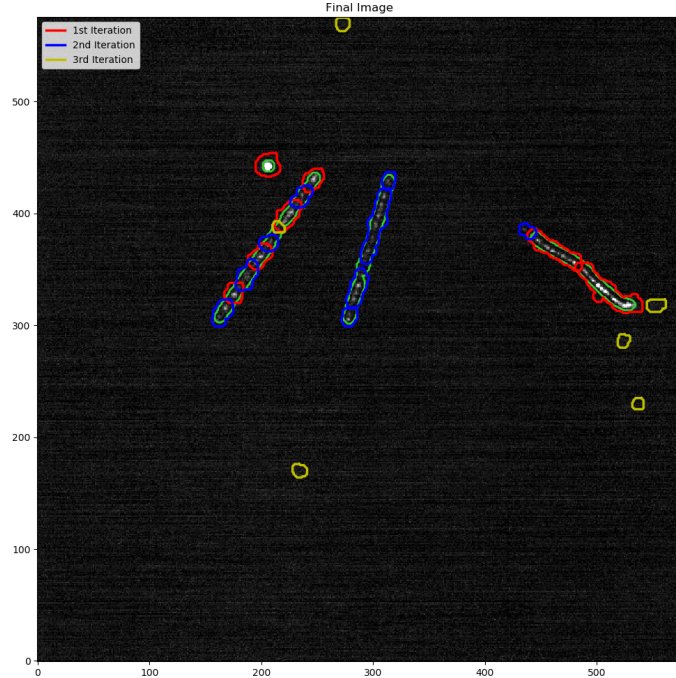


ConfigFile.txt
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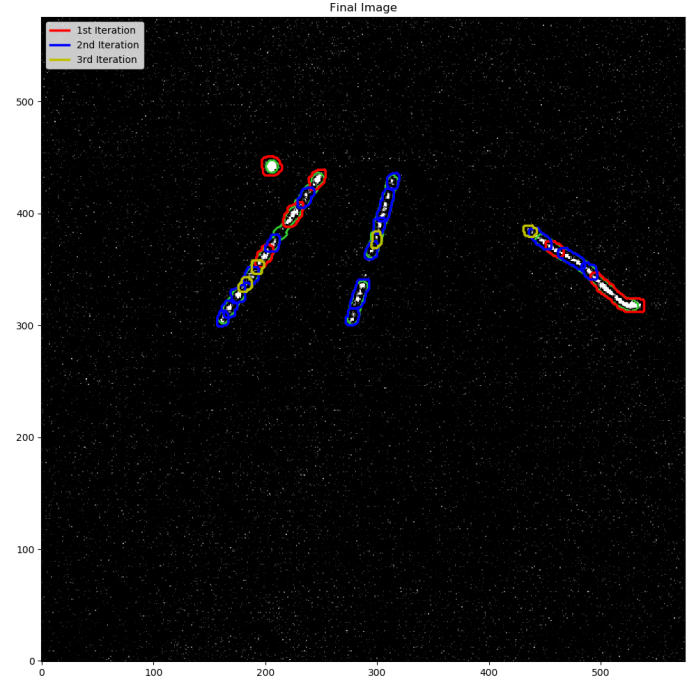


ConfigFile.txt
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BARIUM (10MS) PROBLEMS IN RECO

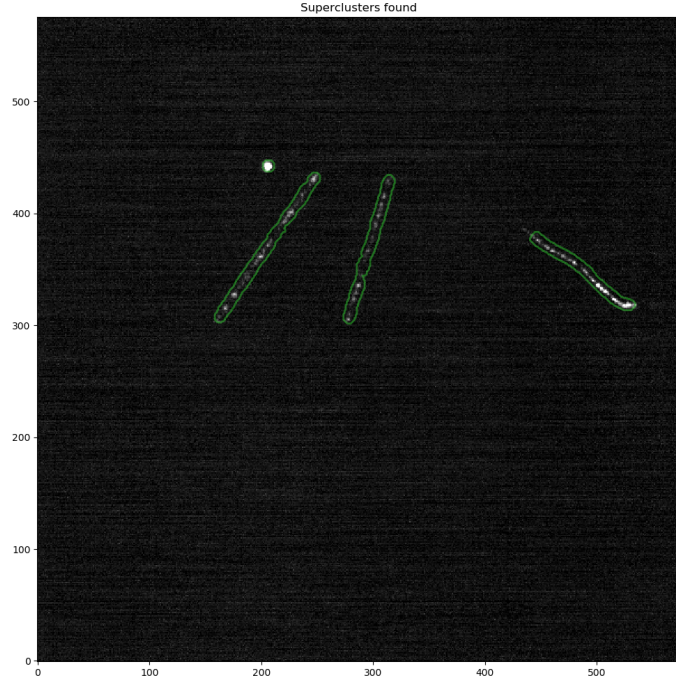


ConfigFile.txt
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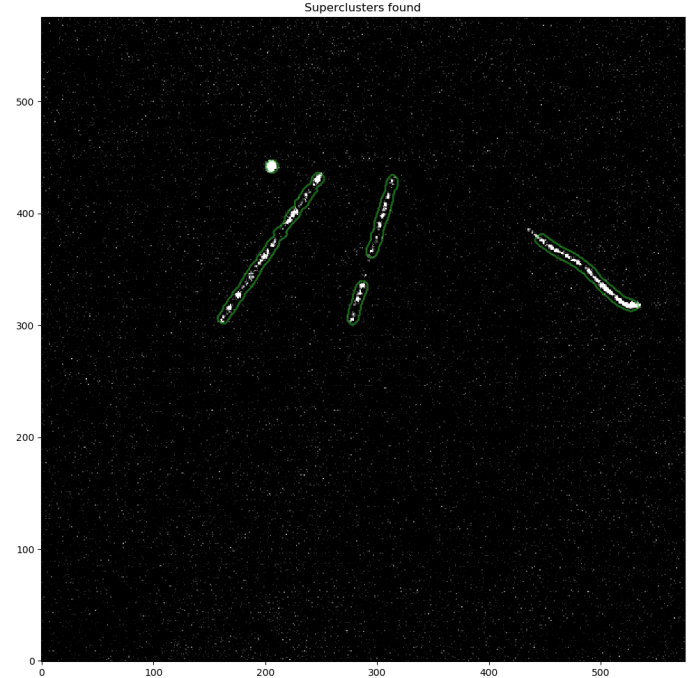


ConfigFile.txt
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line 36 2
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BARIUM (10MS) PROBLEMS IN RECO



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ConfigFile.txt
line 51 [1, 4.5, 3, 4]
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supercluster.py
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