Spot Reconstruction Sizes

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Cross-Checking Reco with Data: the idea

- Let's take run 34883 as an example:

55Fe without collimator, 300 ms exposure							
2023-10-25 12:26:26		34877		34881	Calibration - No Collimator - Step 1 = 5 cm		
		34883		34887	Calibration - No Collimator - Step 2= 15 cm		
		34889		34893	Calibration - No Collimator - Step 3 = 25 cm		
		34897		34901	Calibration - No Collimator - Step 4 = 35 cm		
		34903		34907	Calibration - No Collimator - Step 5 = 46.5 cm		
	2023-10-26 12:36:49	34908		35169	Calibration - No Collimator - Step 3 = 25 cm Long		

- The idea is to recreate the raw images acquired by the camera, by plotting the variables **(sc_xmin, sc_xmean, sc_xmax)** vs. **(sc_ymin, sc_ymean, sc_ymax)**.

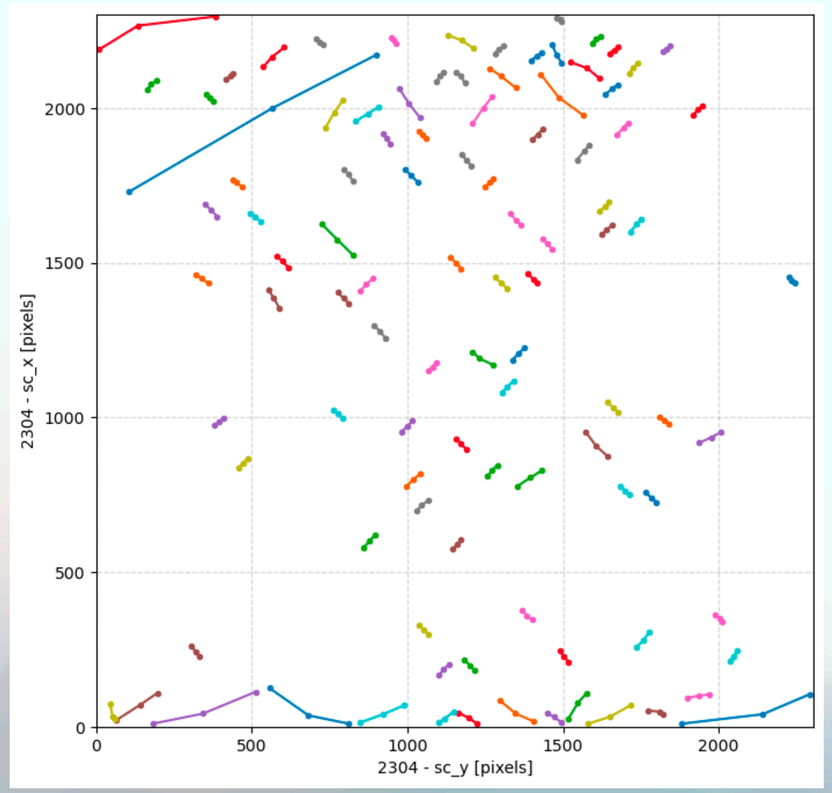
- Filtering on the track angle, the images can be plotted from reco data in the right way, i.e. **inverting sc_xmin with sc_xmax when the angle is negative**.

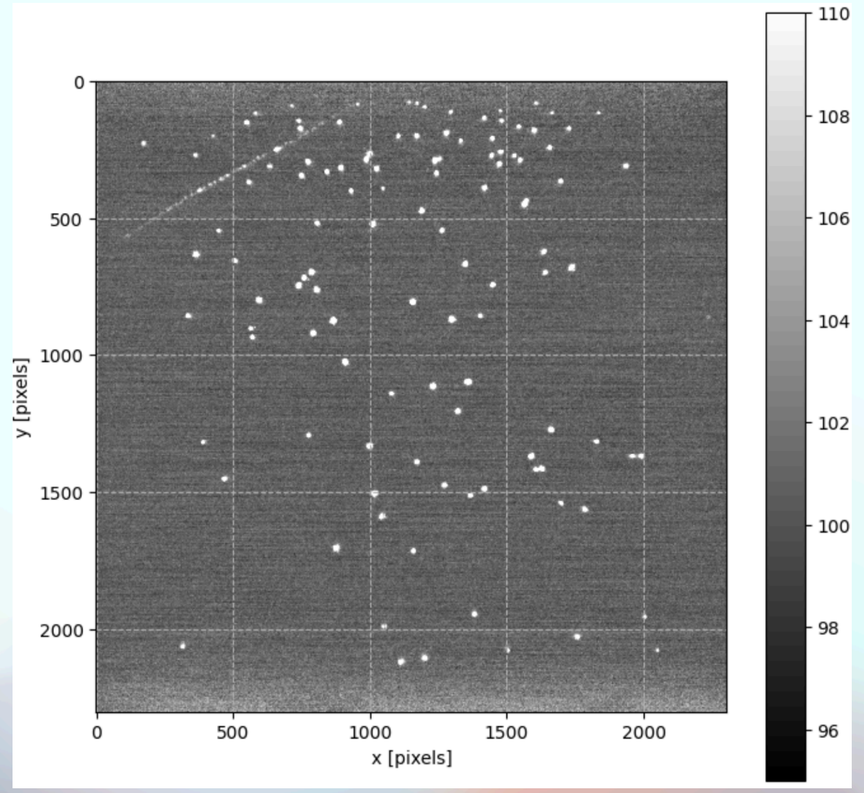
Cross-Checking Reco with Data: results

- Comparing some of the events it is clear **that the reconstructed iron spots**, and thus the cluster region identified by the reco code in general, **are way bigger than the true spot**.

- It is moreover evident that the correct way to visualise the reconstruction is by plotting **x vs. y**, both "flipped" around their normal axis (2304 - ...), but I think this was already known.

event #6, run 34883

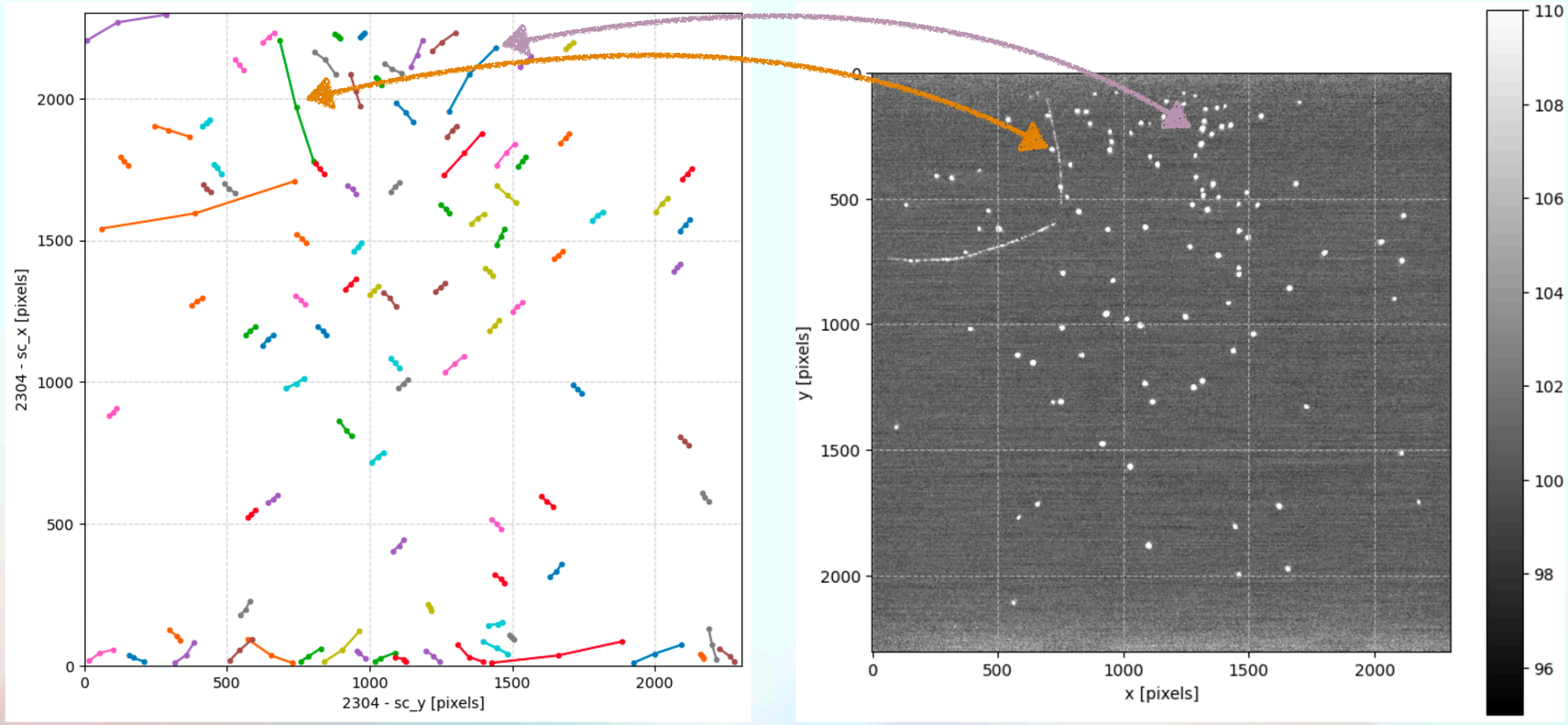




Run 34883: more examples

- Here we can clearly see that **some of the iron spots were “eaten” by the long green track** in the reconstructed plot.
- In the same way the **Y-shaped iron spots in the upper area are reconstructed as a single track**.

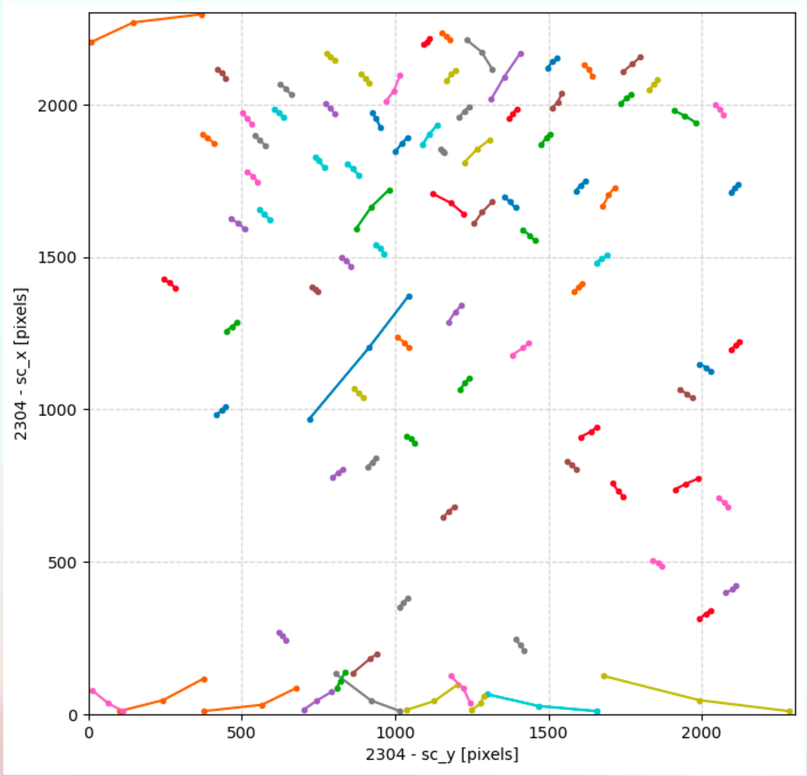
event #9, run 34883

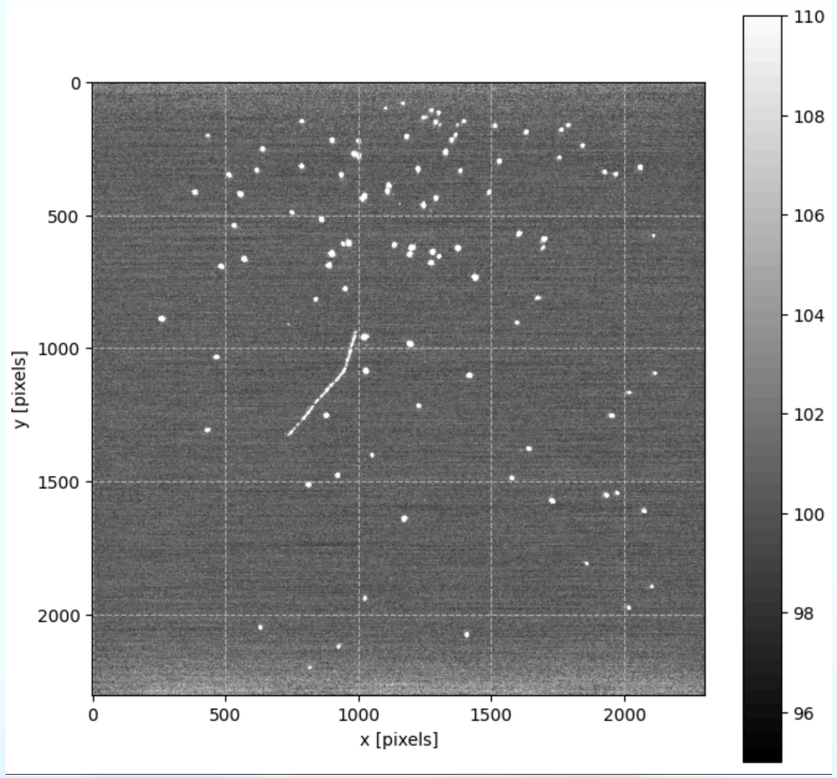


Run 34883: more examples

- Here we can see again the **closer iron spots reconstructed as a single track** in the upper region of the image.
- This is indeed reflected in the “double iron” peak which can be seen in the sc_integral spectrum.

event #4, run 34883





Preliminary Conclusions

- The **reconstructed clusters' sizes are enlarged** with respect to the real ones, and this creates problems when dealing with a large amount of spots/tracks in the same region.

- Another problem emerging from this little study is related to the slimness evaluation, since **also the width of the track could be affected by this "cluster enlarging problem"**.