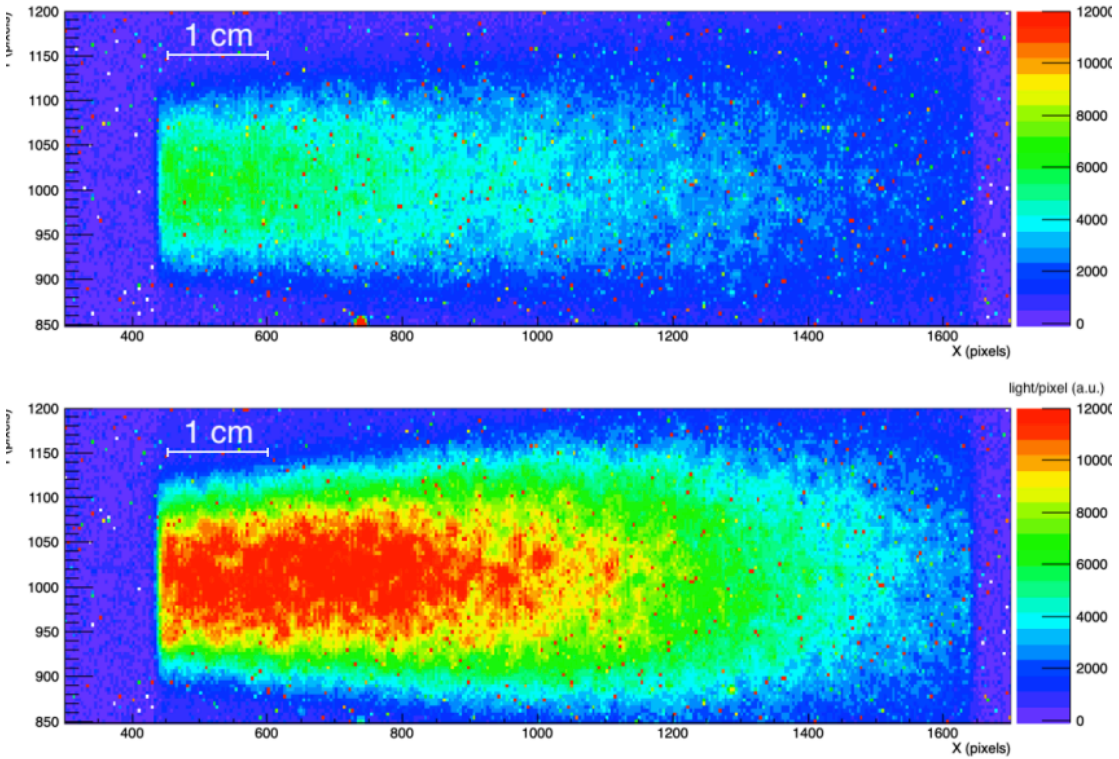
MANGO data

First evidence of luminescence in a He/CF_4 gas mixture induced by non-ionizing electrons



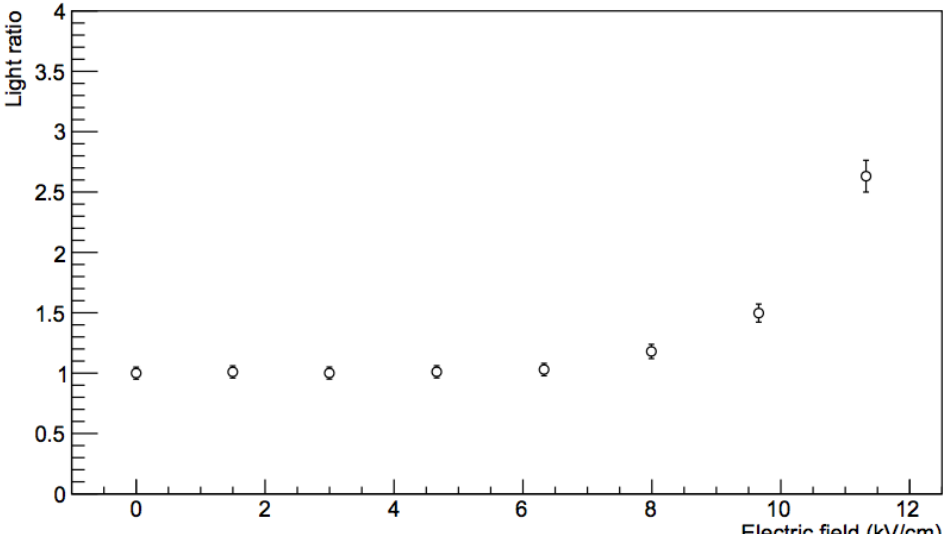


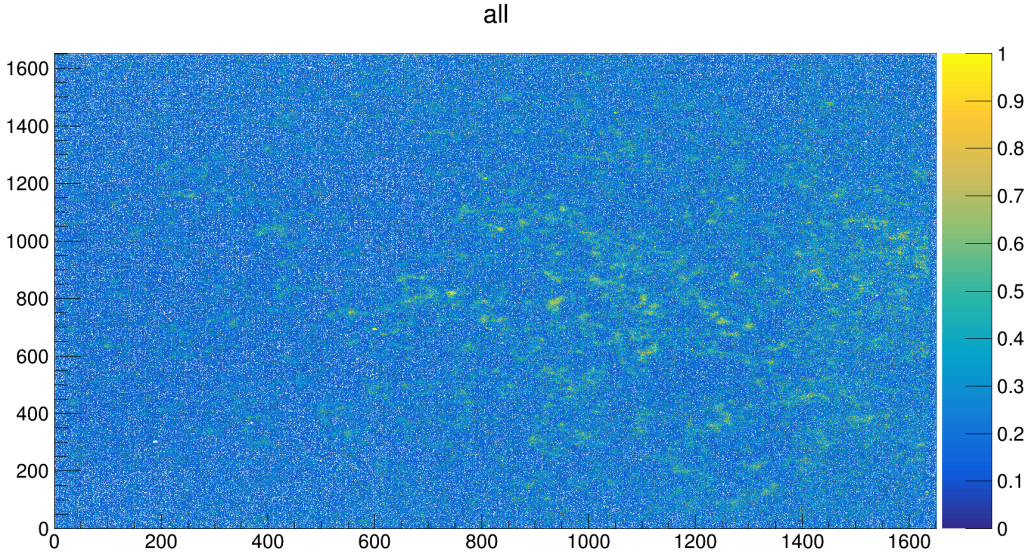
Figure 3. Behavior of total amount of light ratio ($L(E_A)/L(0)$) as a function of E_A

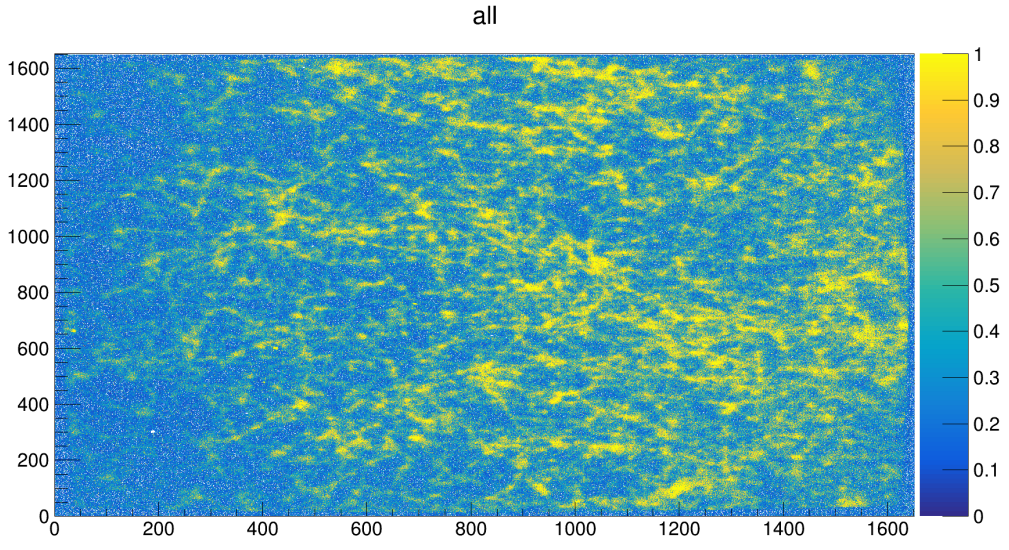
NOTA MOLTO, MA MOLTO BENE:

- the paper data are plotted assuming a 3 mm EL gap
- MANGO was not used at LNF after these data were taken
- We took a set of data on 12/10 at LNGS with the same MANGO configuration of this data
- After 12/10, Luciano opened MANGO and told us that the EL gap he saw there was 2 mm and not 3 mm
- On 4/11 Luciano put the improved mesh at 3 mm EL gap

We used exactly the same GEM + fields settings as the paper

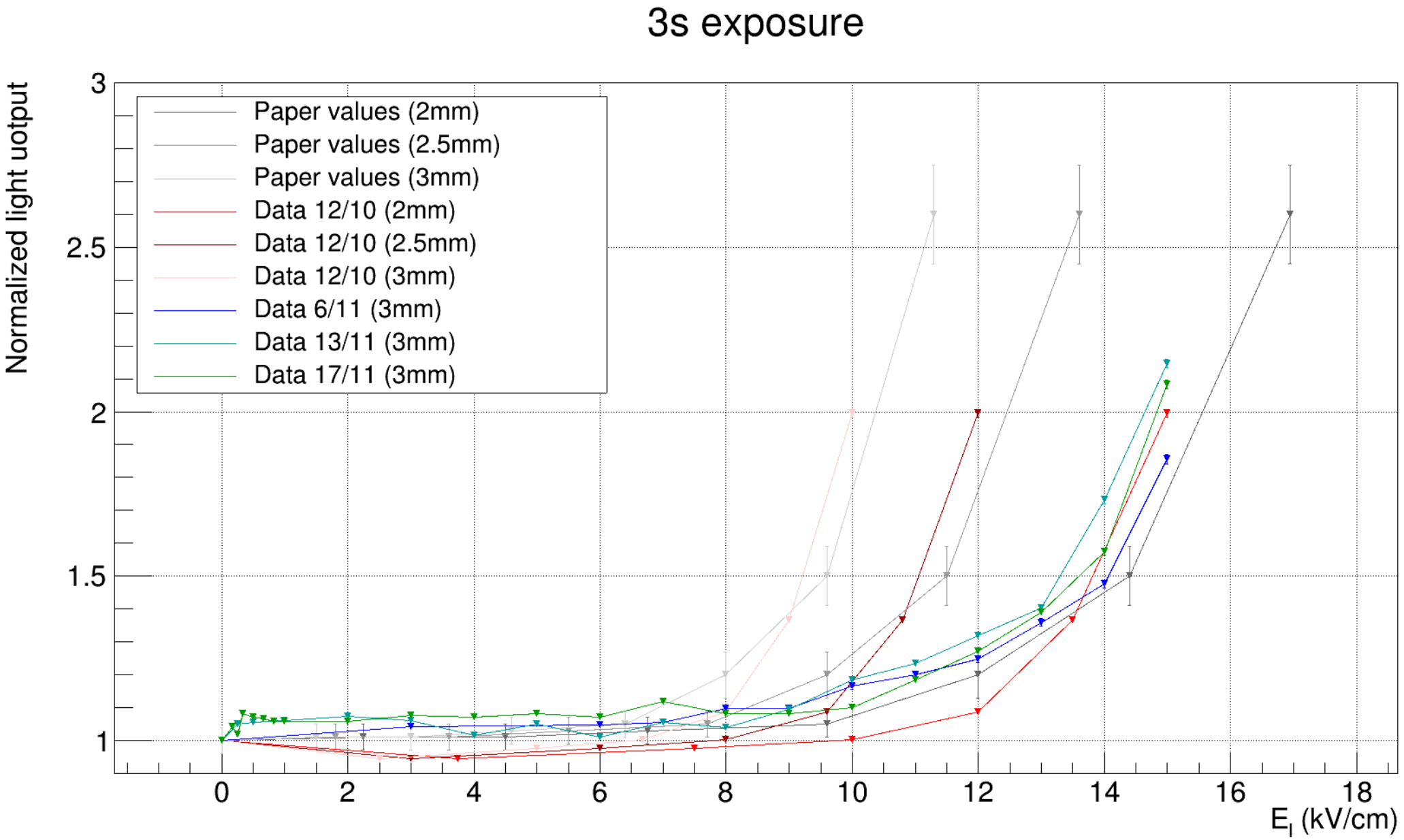
We analysed long exposure 3s data just as was done in the paper





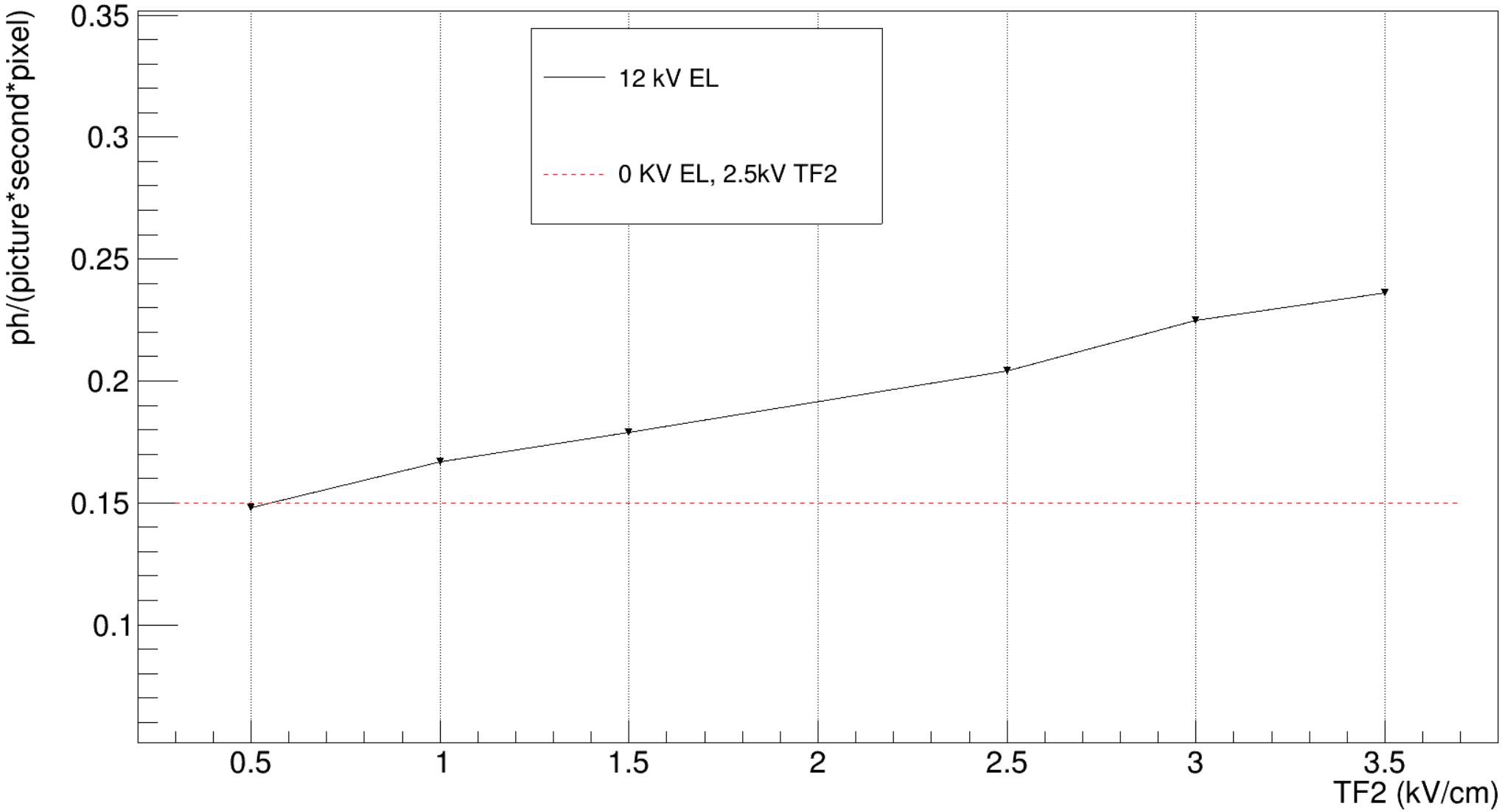
Analysis by G. Dho

- the electric field in the drift gap was kept to 0.9 kV/cm;
- the electric field in the gaps between the GEM equal to 2.5 kV/cm;
- voltage difference across the GEM (V_{GEM}) electrodes was set to 400 V;
- flushed with an He/CF_4 (60/40) mixture at a total rate of 100 cc/min at atmospheric pressure.

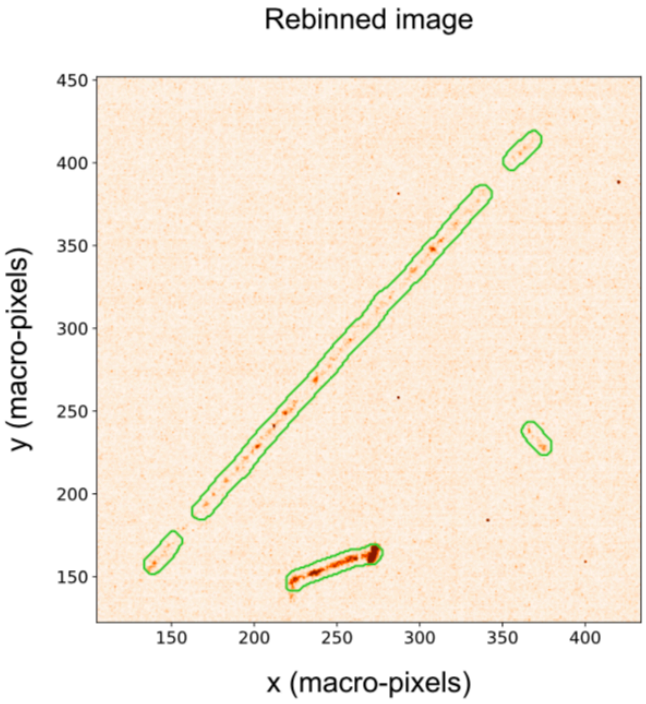


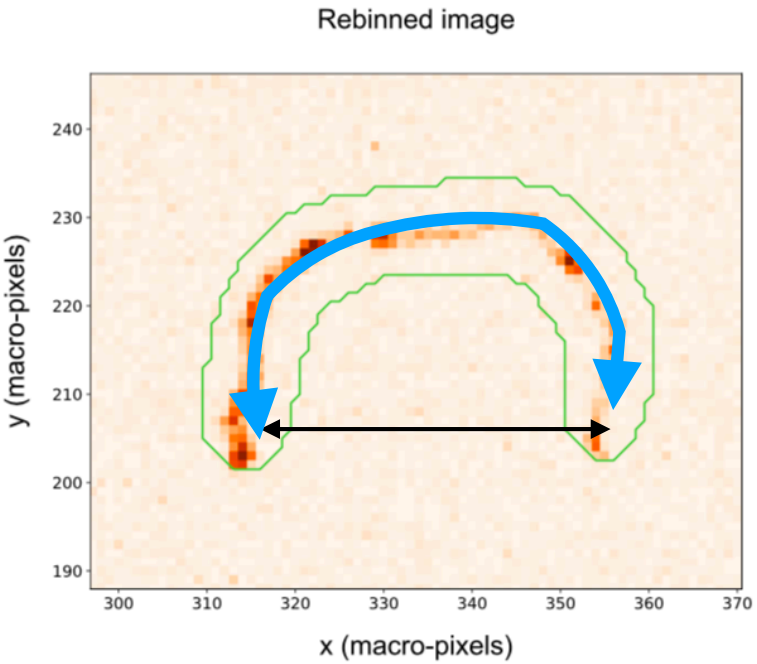
…everything pointing to the fact that the data we published assuming 3 mm EL gap were actually with 2 mm EL gap

We also studied the dependence of light production as a function of the second transfer field (T2)



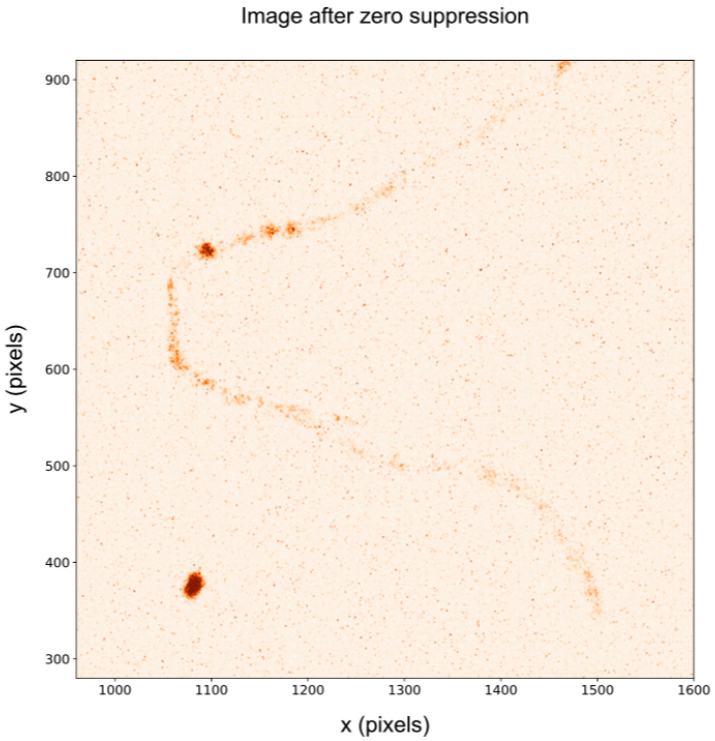
Reco variables

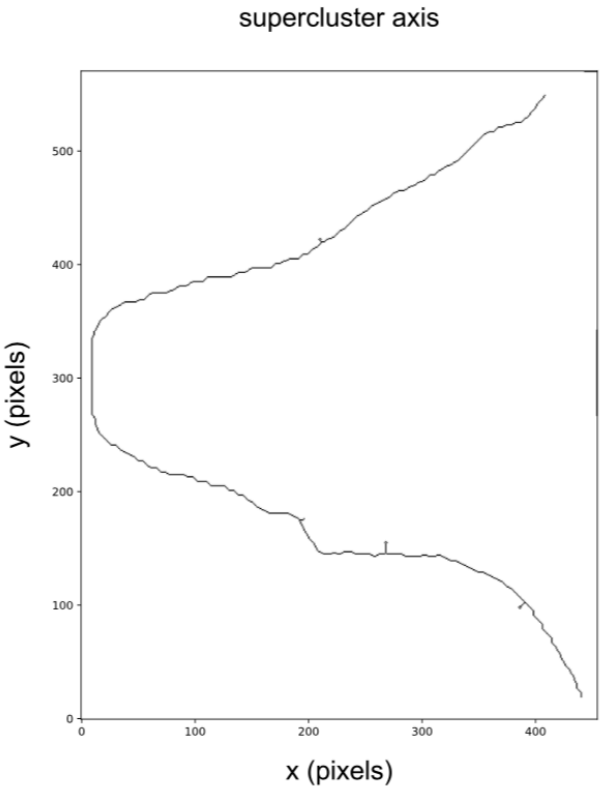




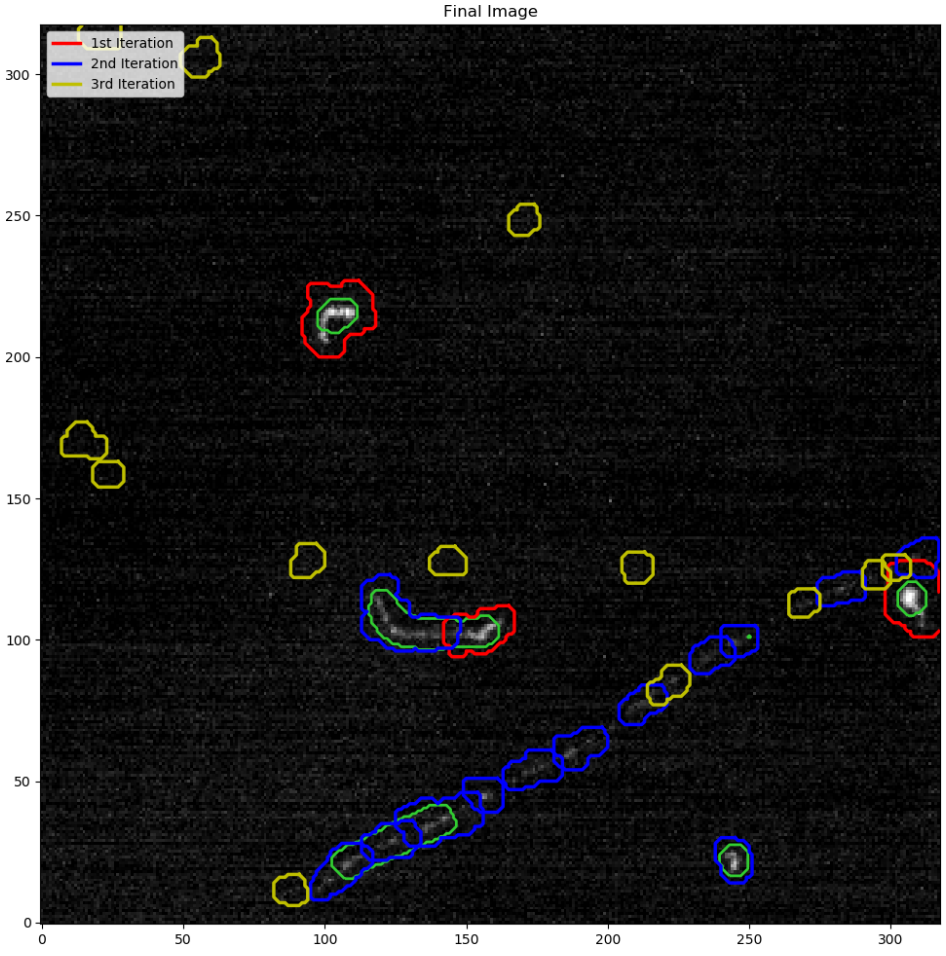
sc_length

sc_pathlength

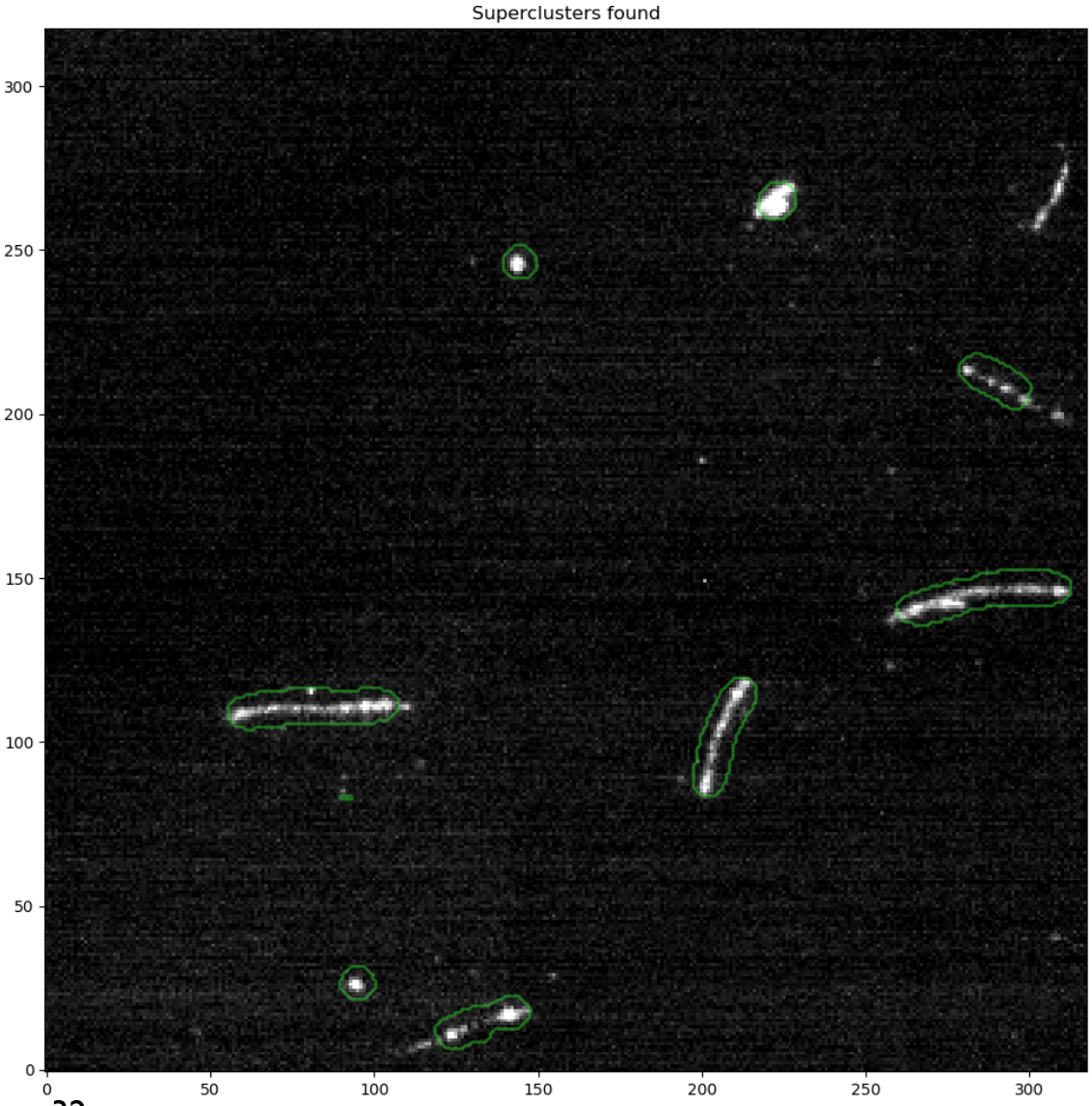




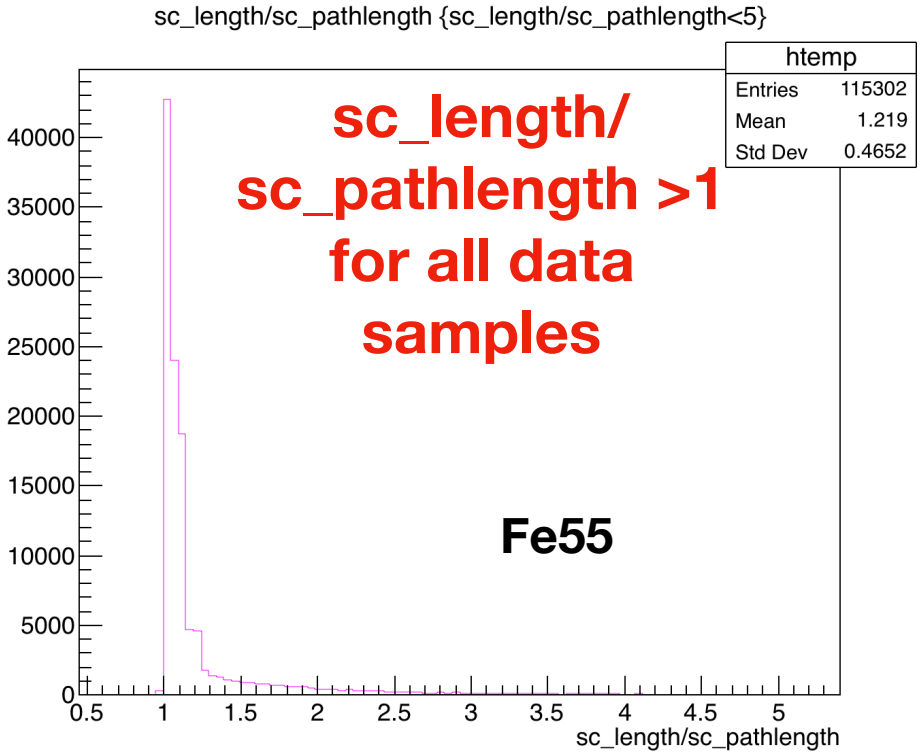
Argument: for curly tracks (i.e. low energy electrons), expect sc_length/ sc_pathlength <1

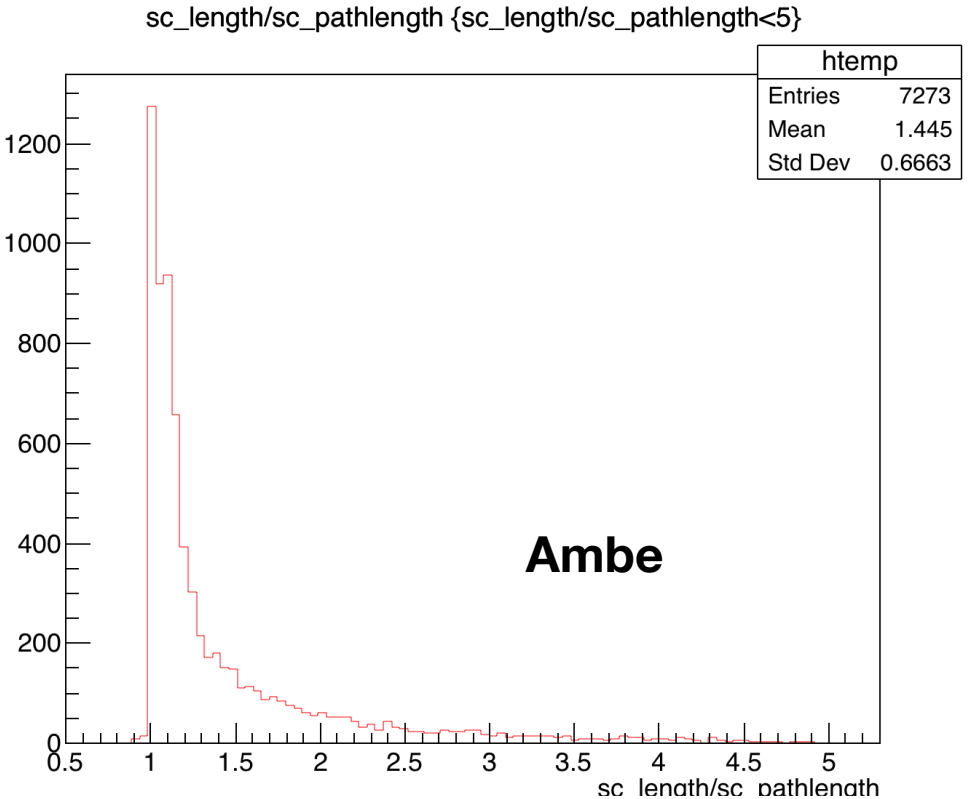


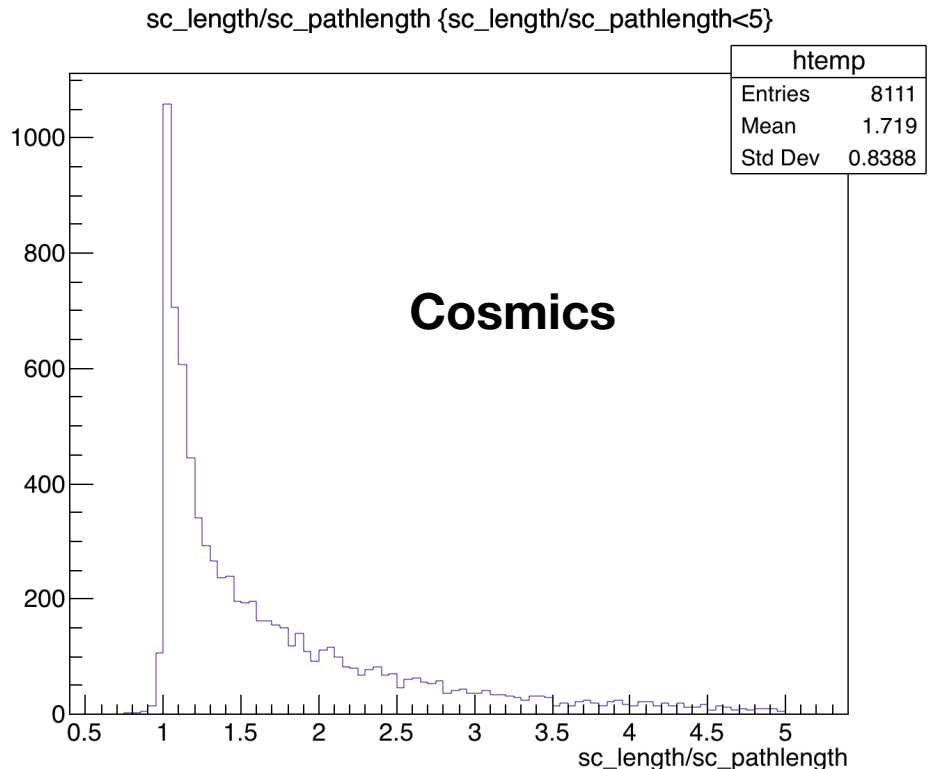
CAVEAT: sometimes the supercluster seem to fail to include track extrema

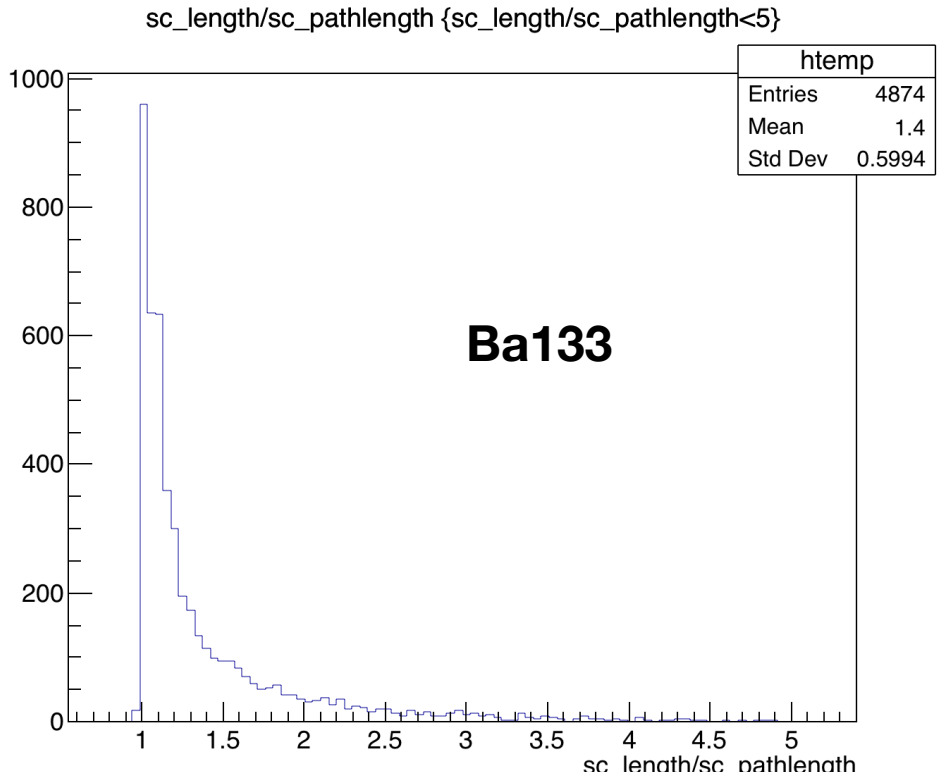


STILL, we are talking about a limited number of pixel at the track extrema (by eye, something < 20%….)


sc_length/sc_pathlength {sc_length/sc_pathlength<5}
htemp
Entries 115302
Mean 1.219
Std Dev 0.4652
sc_length/
sc_pathlength >1
for all data
samples
Fe55
sc_length/sc_pathlength


sc_length/sc_pathlength {sc_length/sc_pathlength<5}
htemp
Entries 7273
Mean 1.445
Std Dev 0.6663
Ambe


sc_length/sc_pathlength {sc_length/sc_pathlength<5}
htemp
Entries 8111
Mean 1.719
Std Dev 0.8388
Cosmics
sc_length/sc_pathlength


sc_length/sc_pathlength {sc_length/sc_pathlength<5}
htemp
Entries 4874
Mean 1.4
Std Dev 0.5994
Ba133