

Resolution studies for ER simulation

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What I did

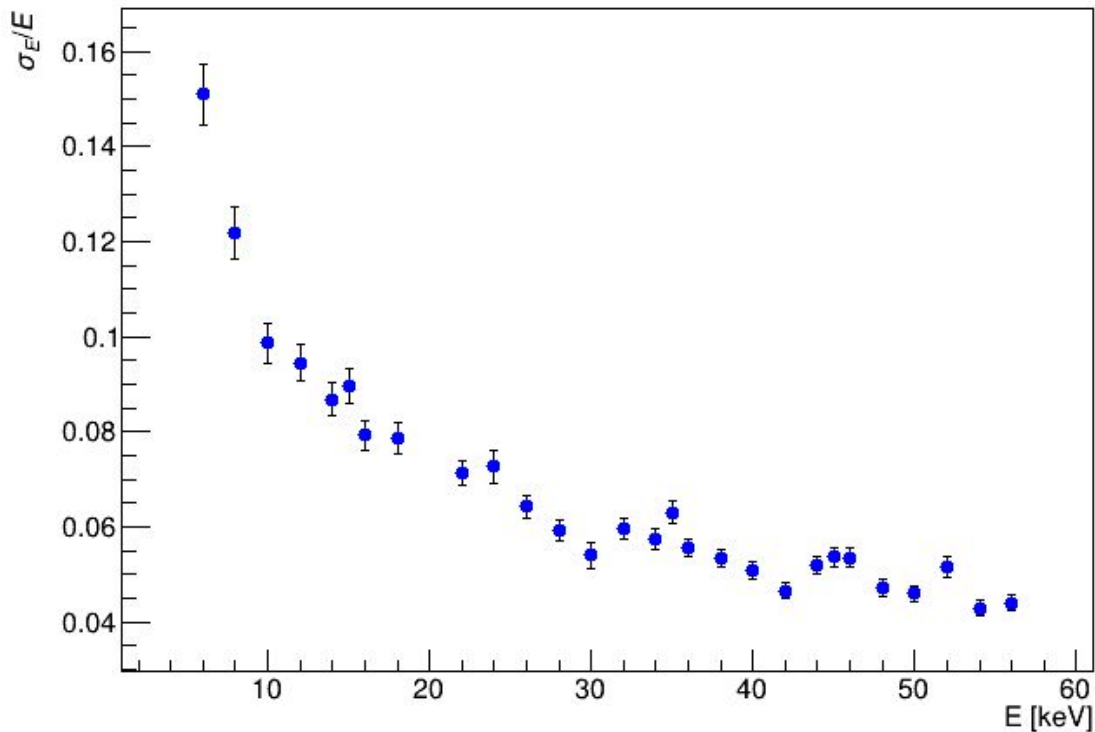
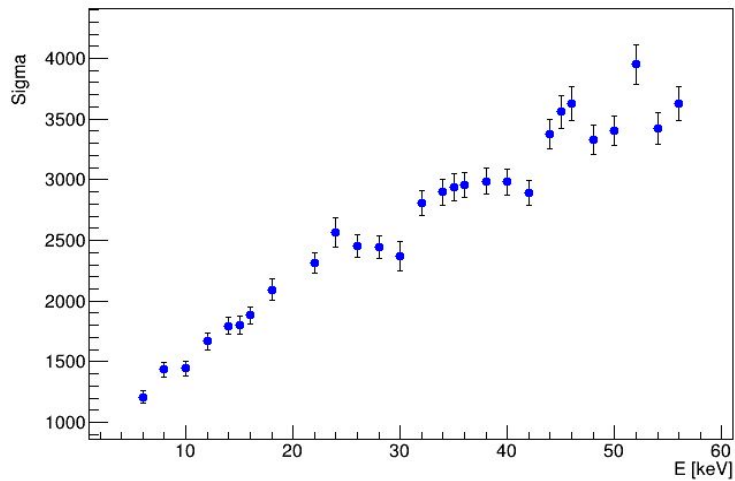
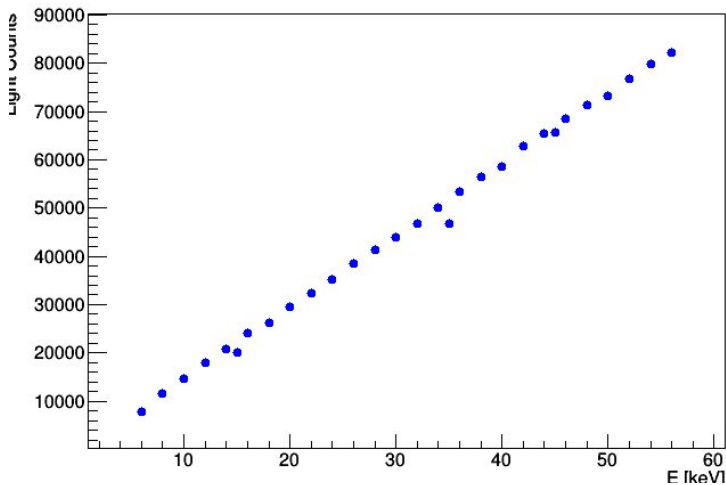
We still don't understand the behavior of the ER resolution.

Why is almost constant, in MC as well as in data?

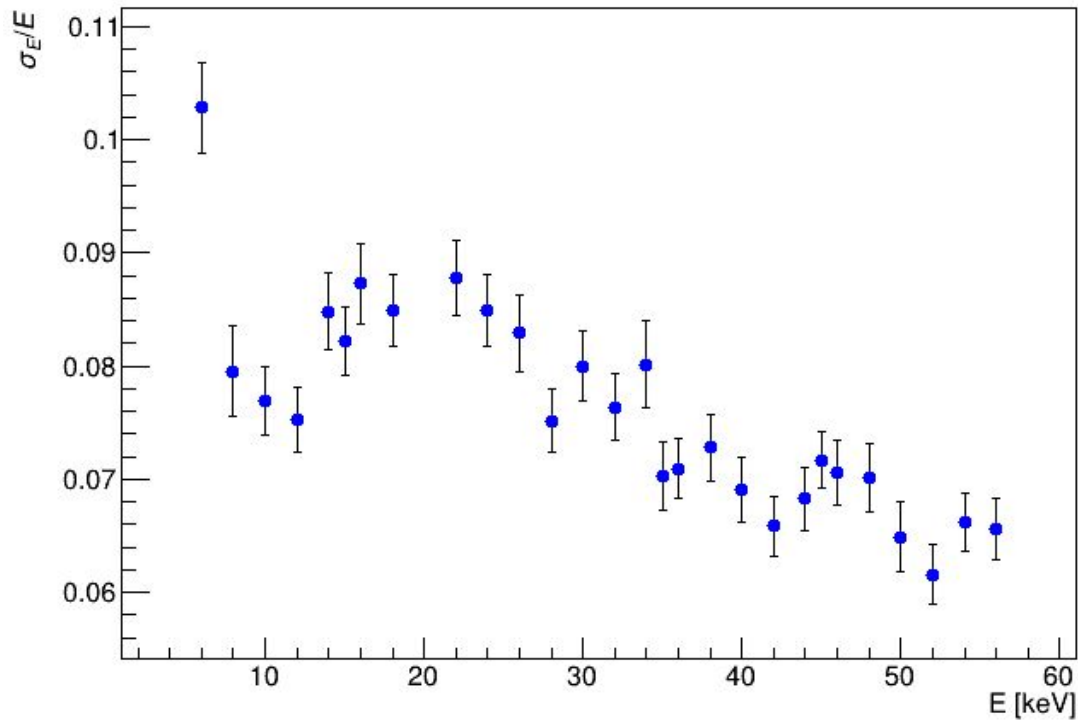
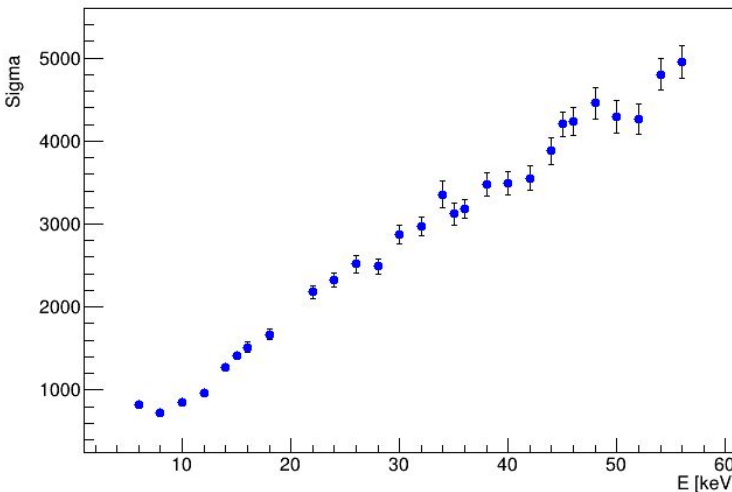
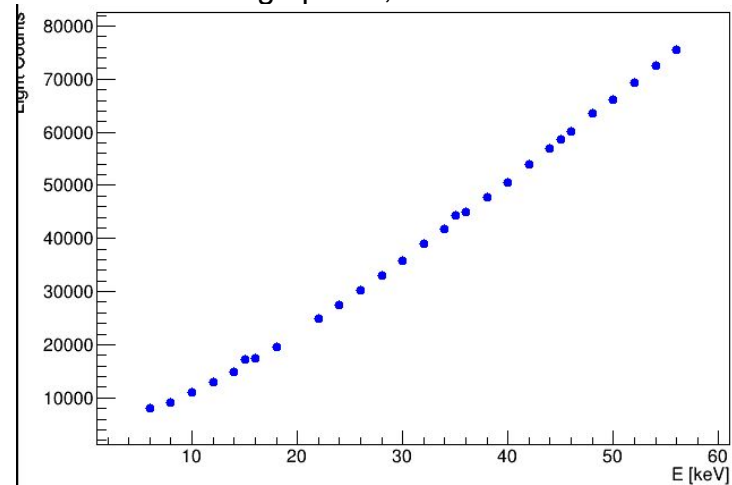
We rather expect: $A/\sqrt{E}+B$

I digitized ERs (6-56 keV) **without noise** and **without saturation** and calculated the integral by summing all the pixels (without using reconstruction code).

500 events per run, **NO** saturation, **NO** noise, **WITH** T-L diffusions (integral calculated by integrating image pixels, not with reconstruction code)

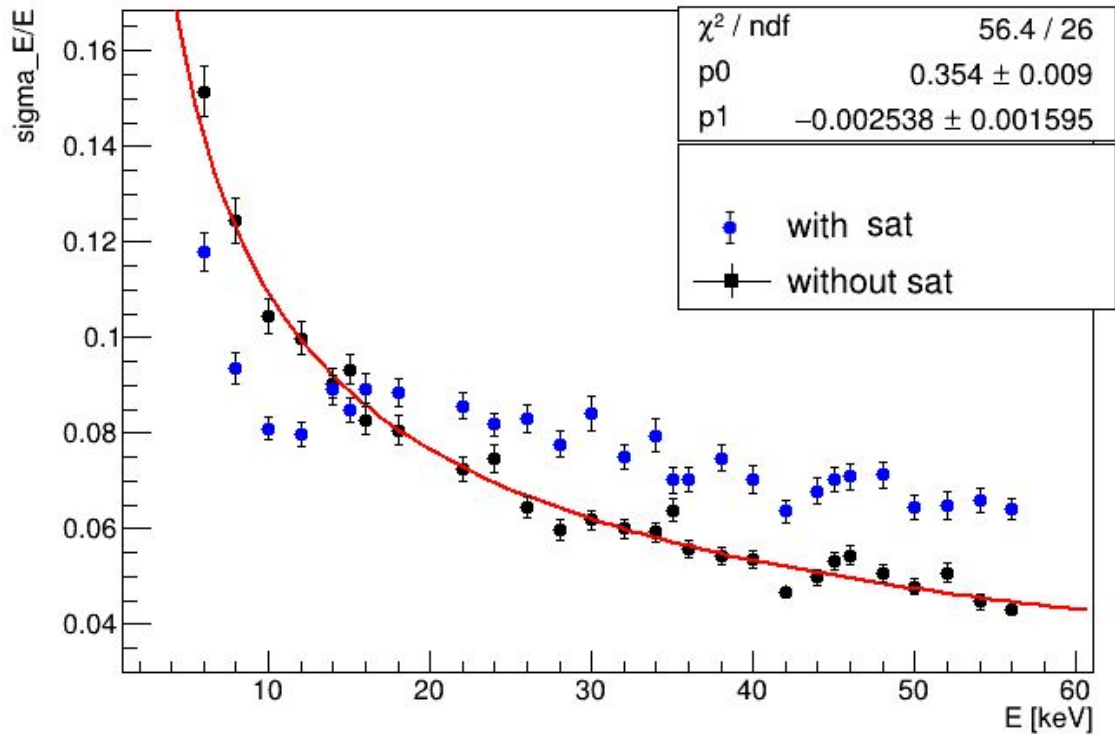


500 events per run, **WITH** saturation, **NO** noise, **WITH** T-L diffusions (integral calculated by integrating image pixels, not with reconstruction code)



Saturation VS no-saturation

(no noise, integral calculated by integrating image pixels, not with reconstruction code)

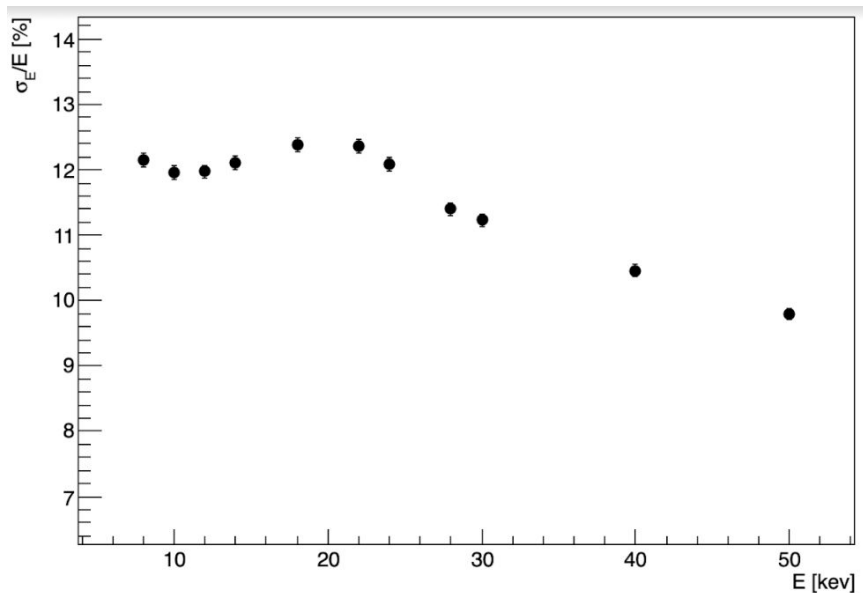


fitting

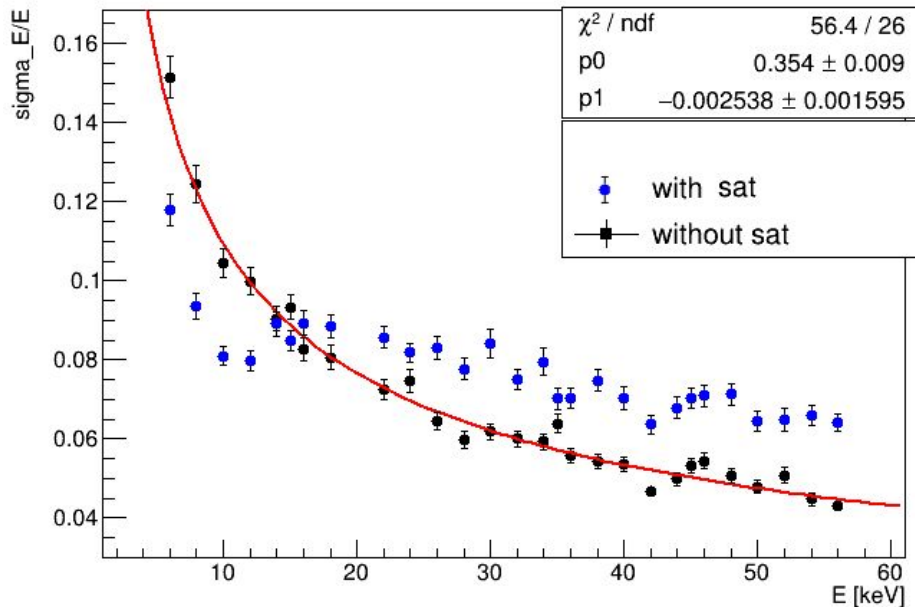
$A/\sqrt{E}+B$

Comparison with Samuele's result

Samuele's last plot (full stats: ~10000 ev) with noise and using reconstruction



Pietro's **NO** noise and **NO** reconstruction (500 events)



the offset may be due to the noise

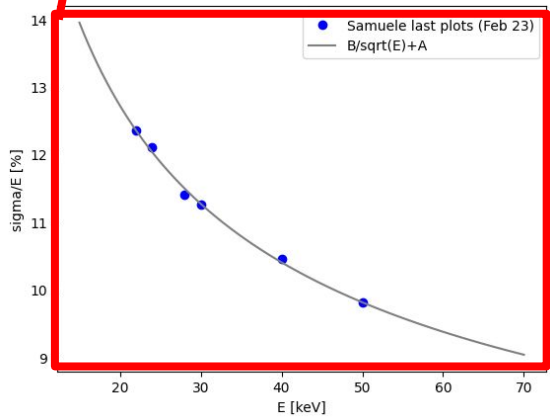
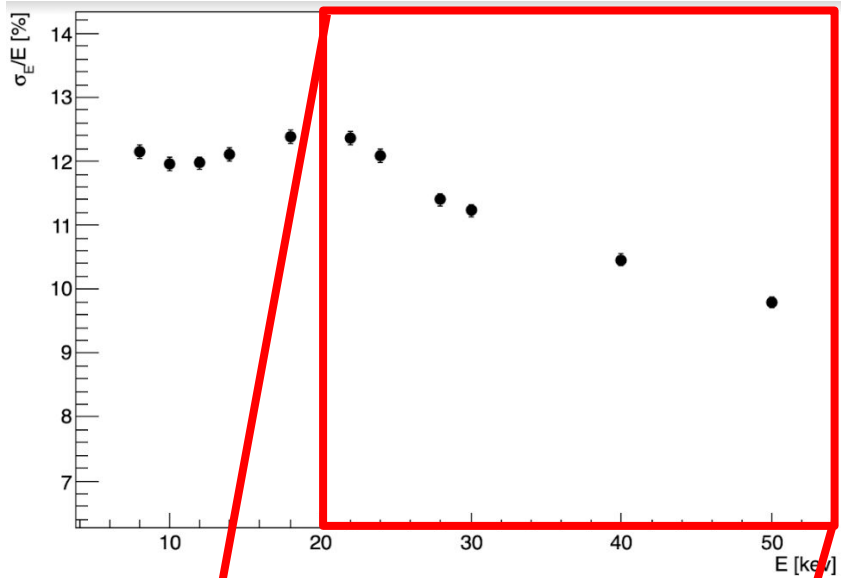
Conclusions

- saturation effect in MC improves resolution of spots (6-15 keV), and it worsen it for snakes (>15 keV). Why? Is this behavior also in data?

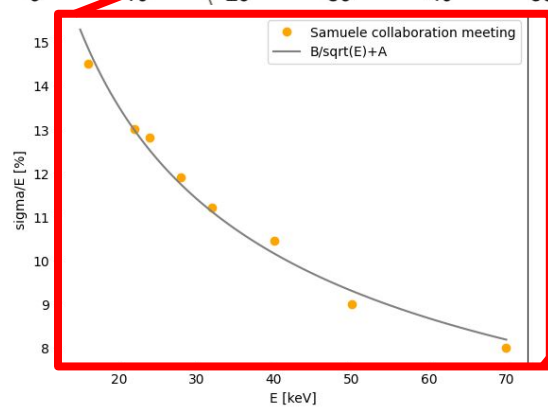
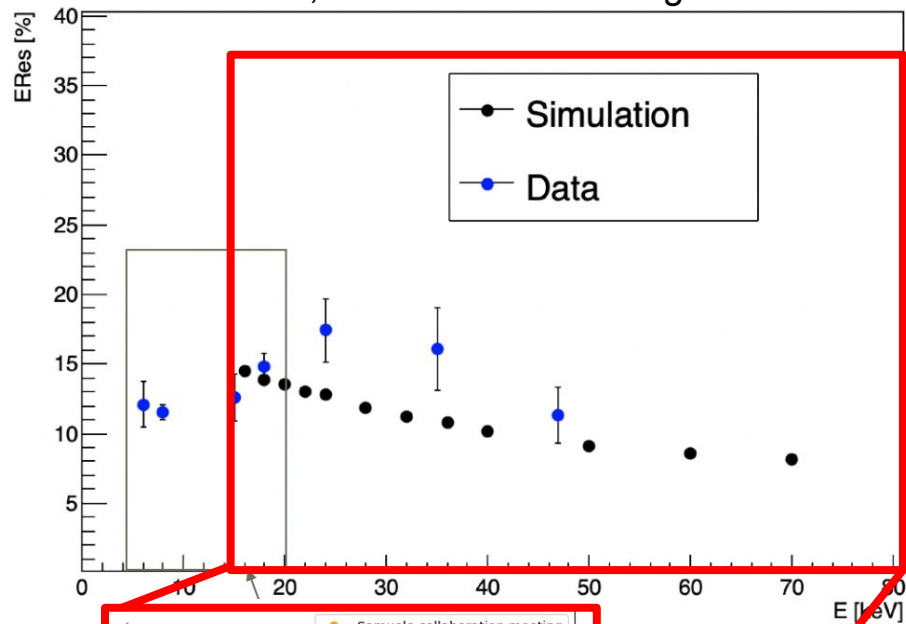
Ideas:

- comparing with Samuele's resolution, using the noise and reconstruction. (but need to unify digitization codes)
- other ideas?

Samuele, last plot (Feb 23)



Samuele, collaboration meeting



The differences in Samuele's plots may be due to different statistics he used

