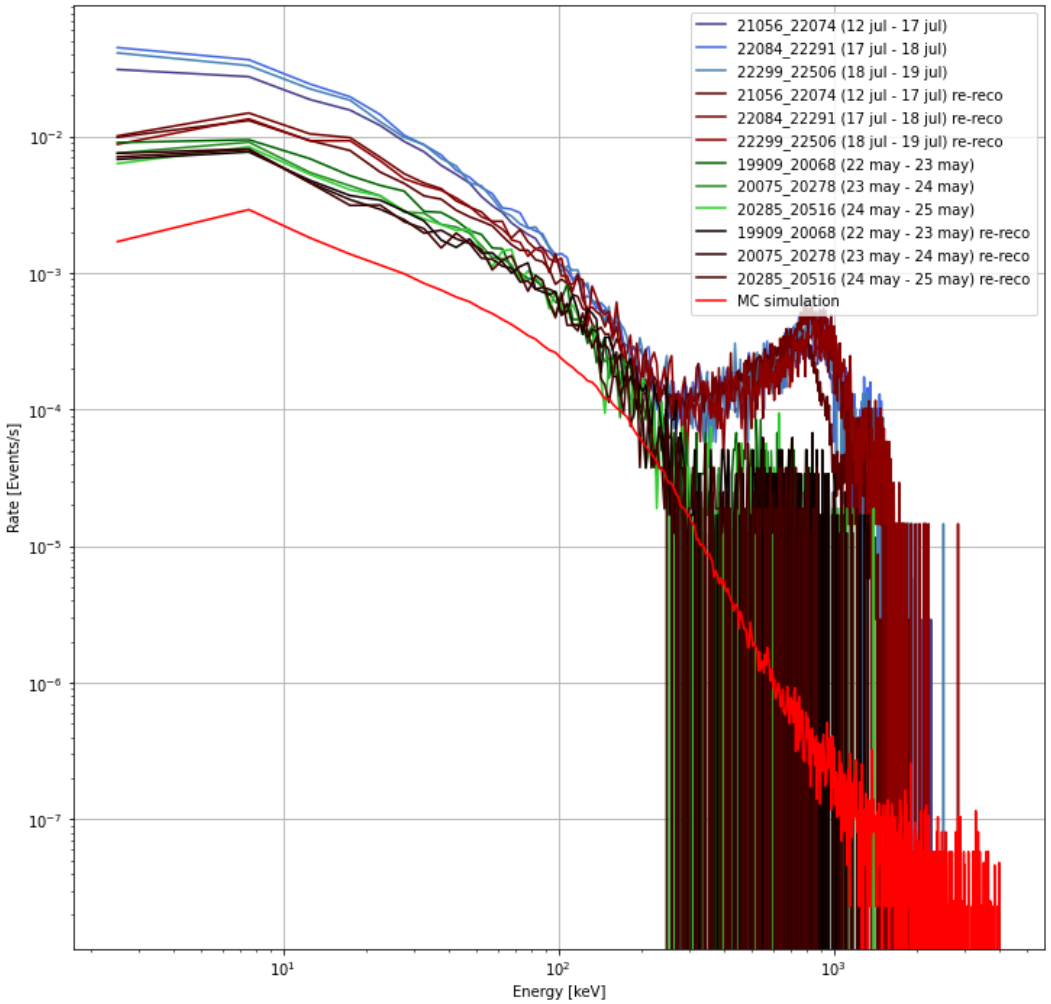
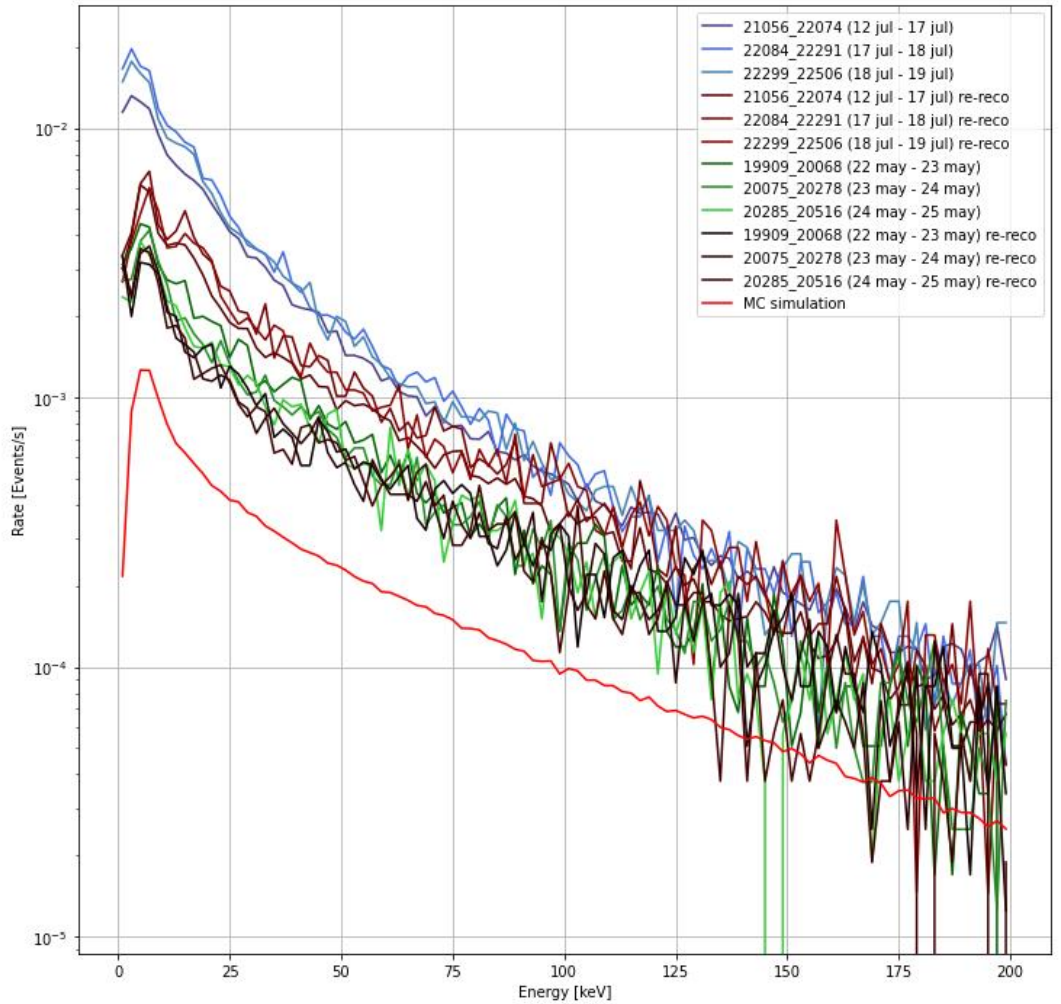
Data/MC comparison

Analysis meeting 1/02/2024

F. Di Giambattista

Re-reco Run3


21056_22074 (12 jul - 17 jul)
22084_22291 (17 jul - 18 jul)
22299_22506 (18 jul - 19 jul)
21056_22074 (12 jul - 17 jul) re-reco
22084_22291 (17 jul - 18 jul) re-reco
22299_22506 (18 jul - 19 jul) re-reco
19909_20068 (22 may - 23 may)
20075_20278 (23 may - 24 may)
20285_20516 (24 may - 25 may)
19909_20068 (22 may - 23 may) re-reco
20075_20278 (23 may - 24 may) re-reco
20285_20516 (24 may - 25 may) re-reco
MC simulation
Rate [Events/s]
Energy [keV]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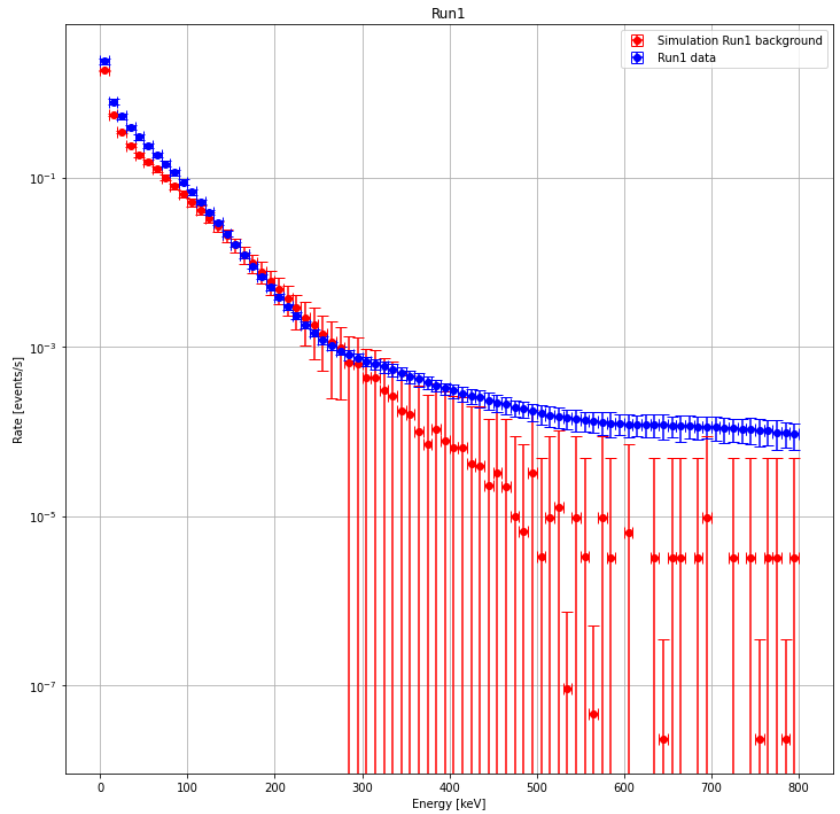
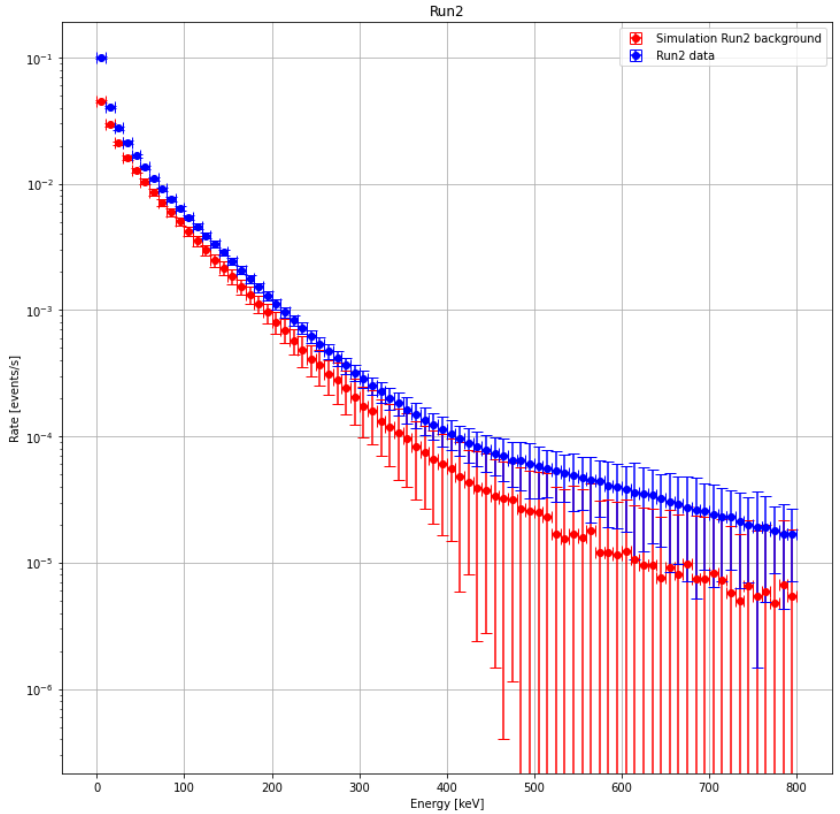
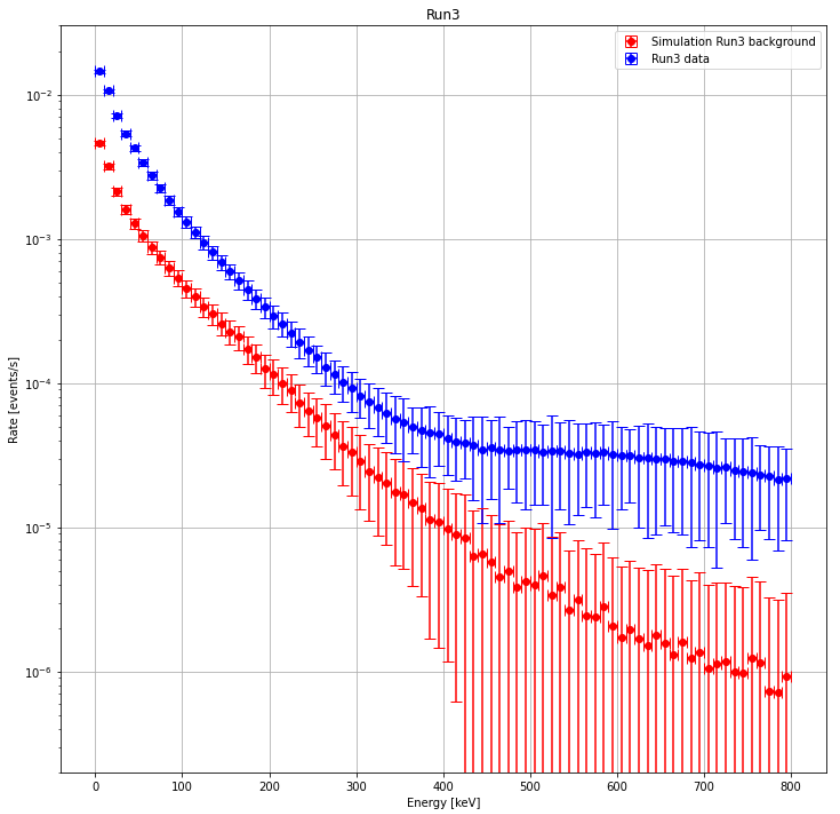
MC simulation
Rate [Events/s]
Energy [keV]

Run1-2-3 data/MC energy spectrum

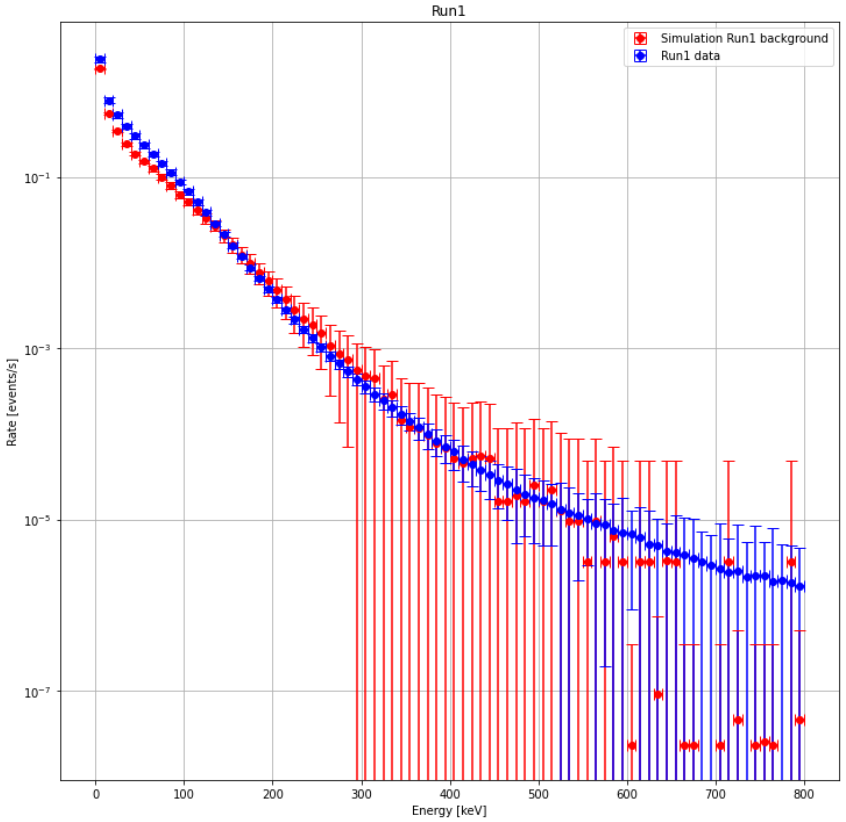


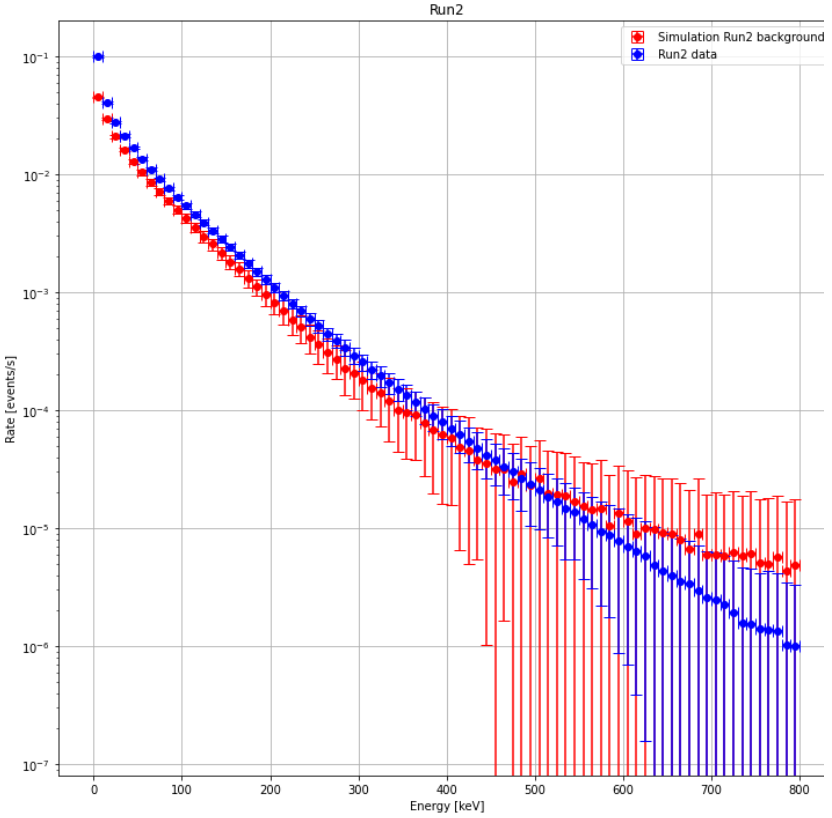


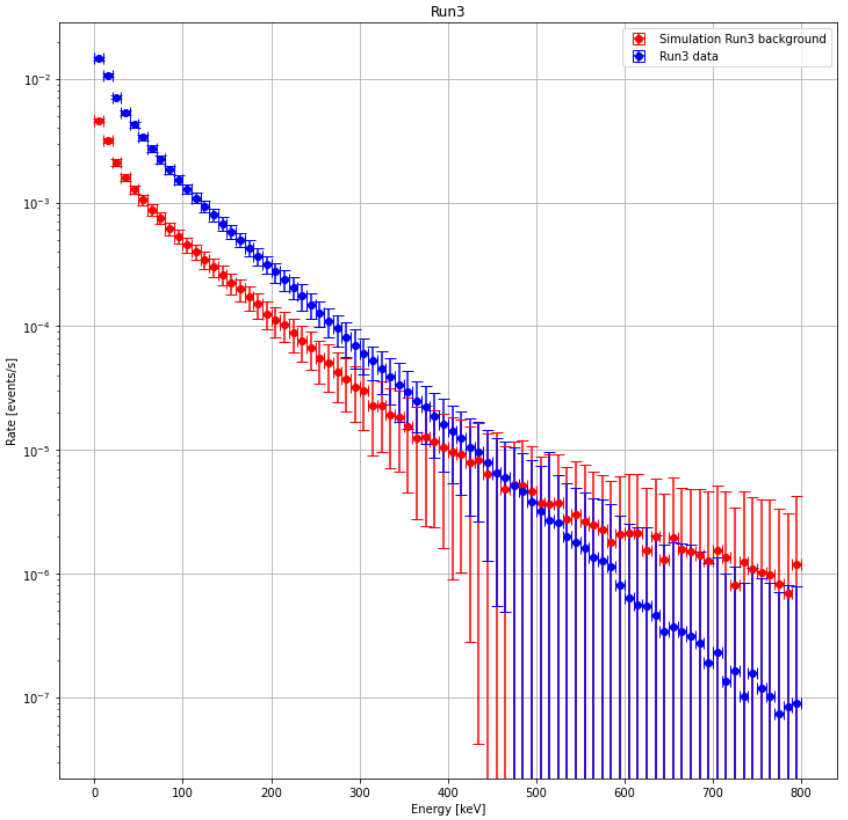


Quality cuts: sc_rms>6 && sc_tgausssigma*0.152>0.5 + Geo cuts: sc_xmin, sc_ymin>400 && sc_xmax,sc_ymax<1900

Run1-2-3 data/MC energy spectrum – cut delta

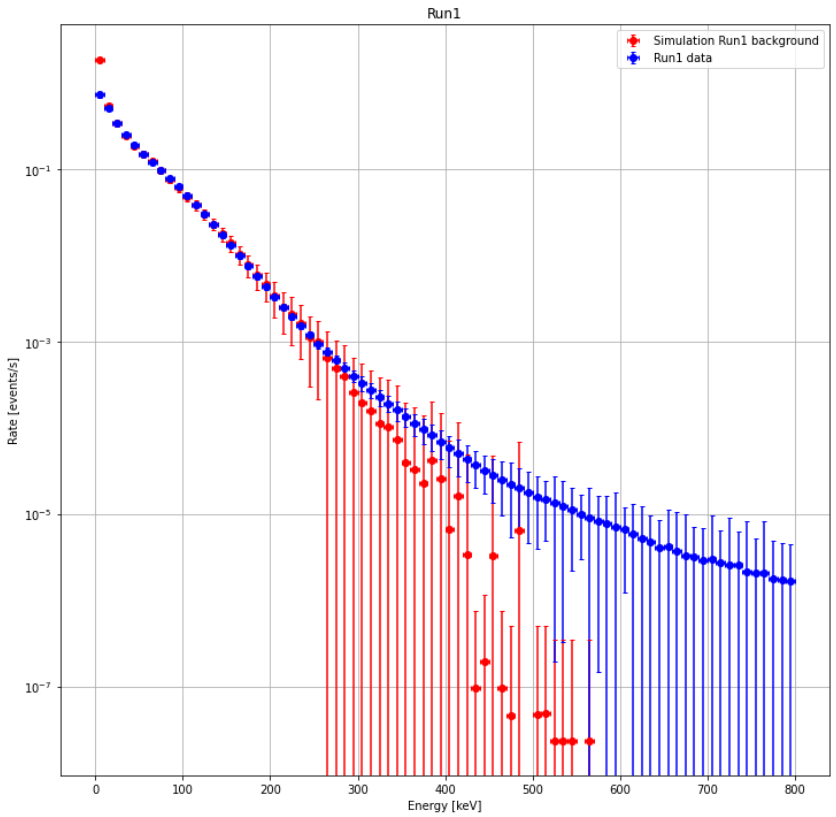


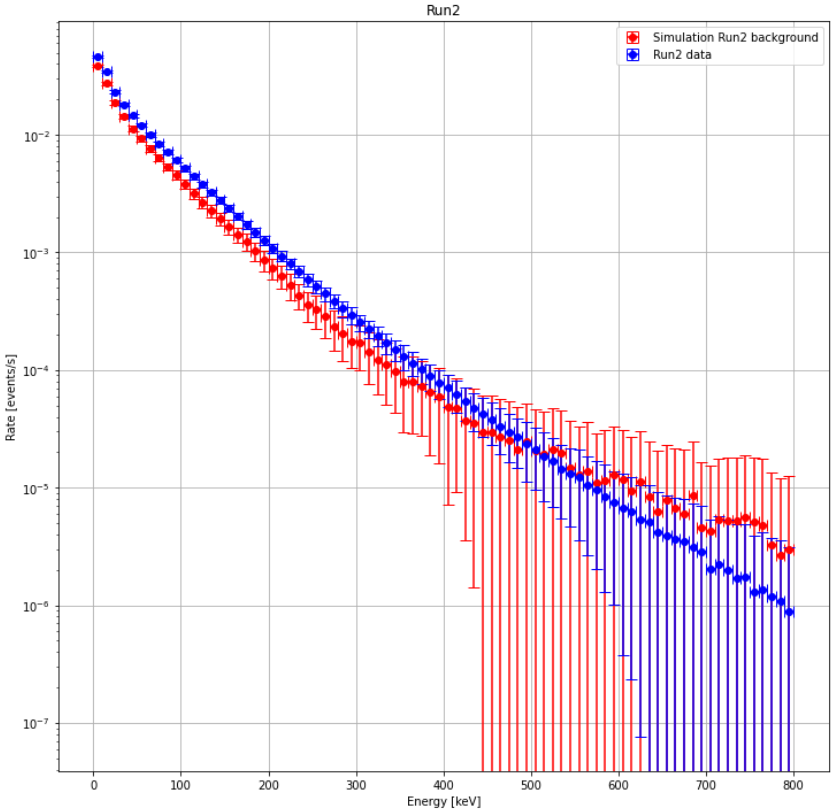


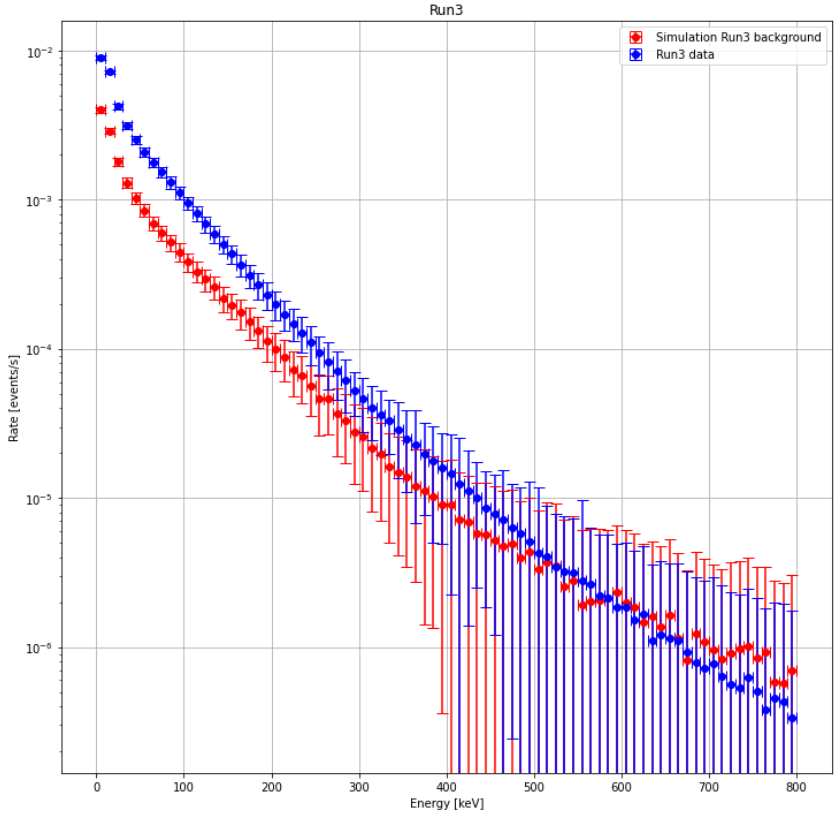


Quality cuts: sc_rms>6 && sc_tgausssigma*0.152>0.5 + Geo cuts: sc_xmin, sc_ymin>400 && sc_xmax,sc_ymax<1900
Alpha cut: sc_integral/sc_nhits<40

Run1-2-3 data/MC energy spectrum – cut delta

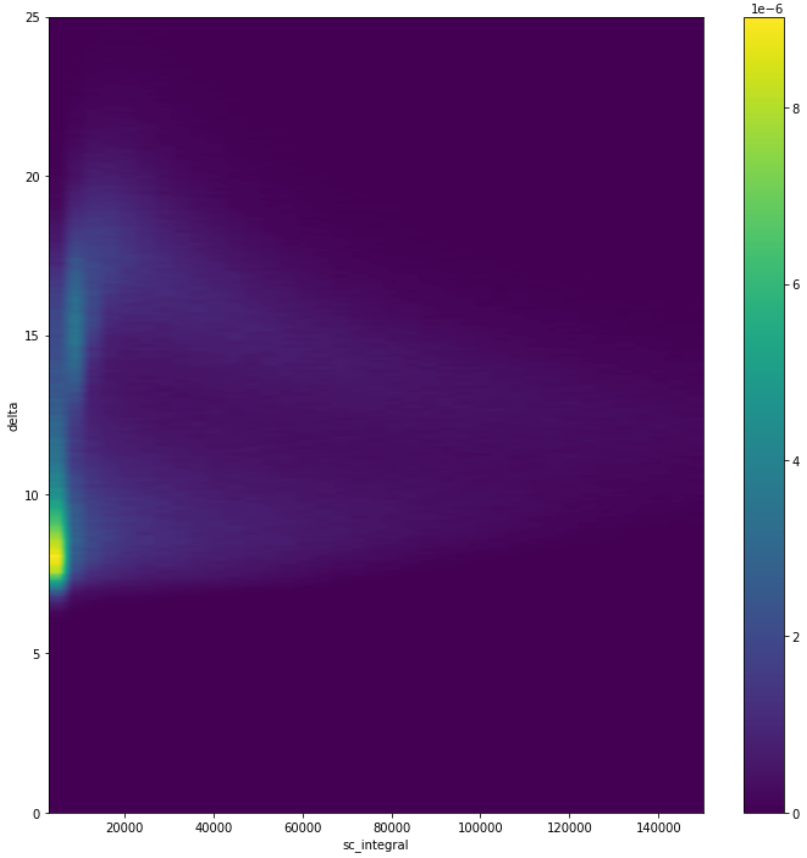




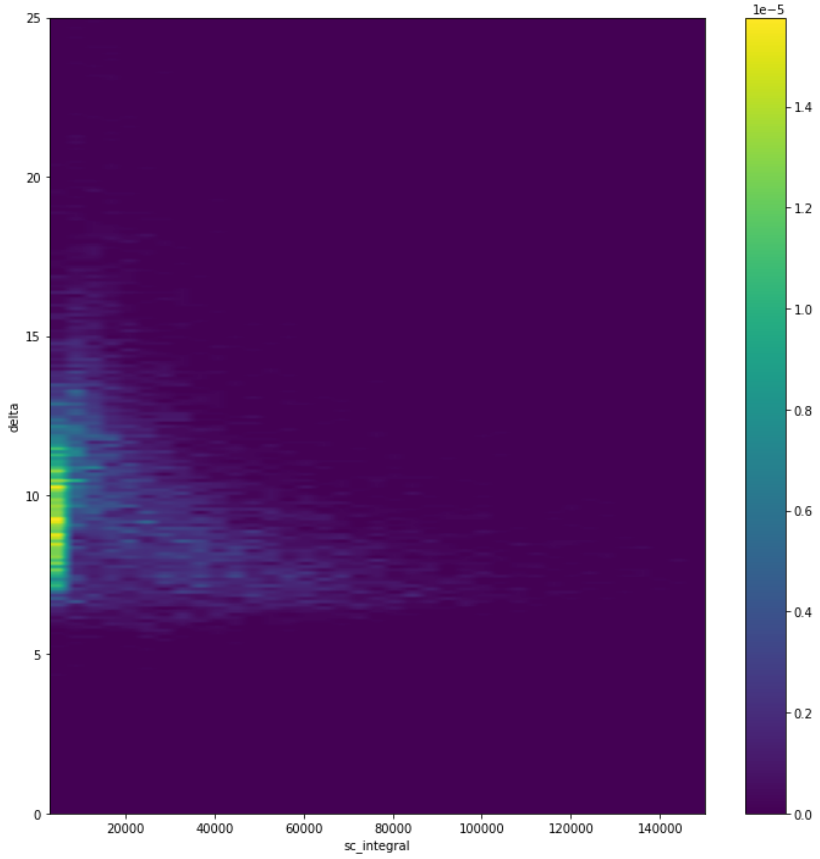


Quality cuts: sc_rms>6 && sc_tgausssigma*0.152>0.5 + Geo cuts: sc_xmin, sc_ymin>400 && sc_xmax,sc_ymax<1900
Alpha cut: sc_integral/sc_nhits<40 + MIP cut: sc_integral/sc_nhits>11
MC does not include high energy tracks – so fewer alphas and high energy electrons

Delta MC/data – Run 1



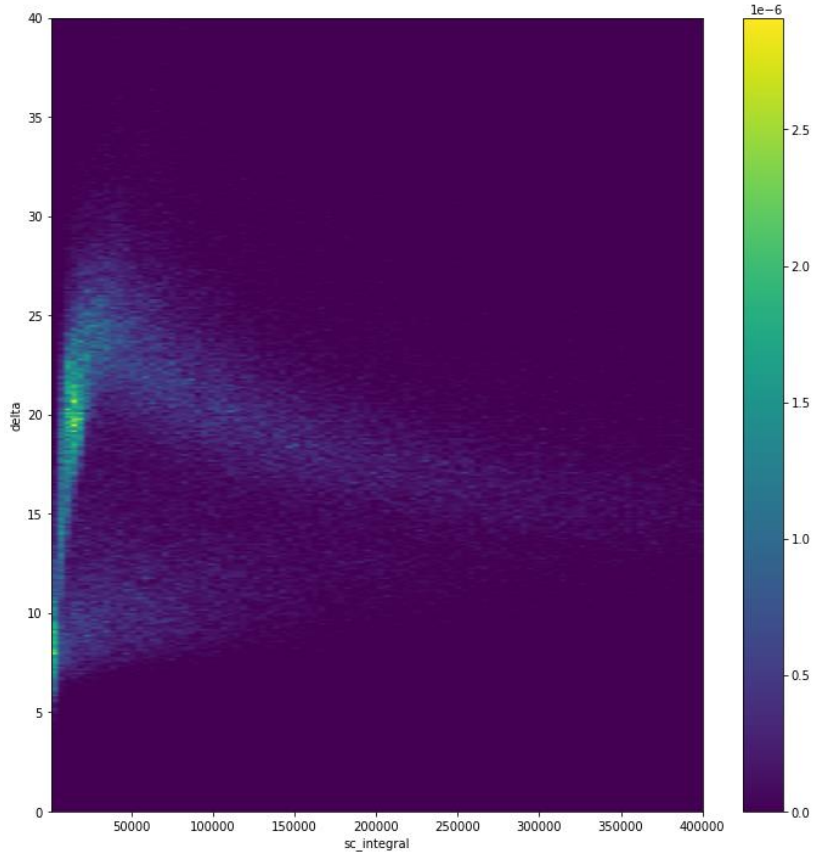
Data



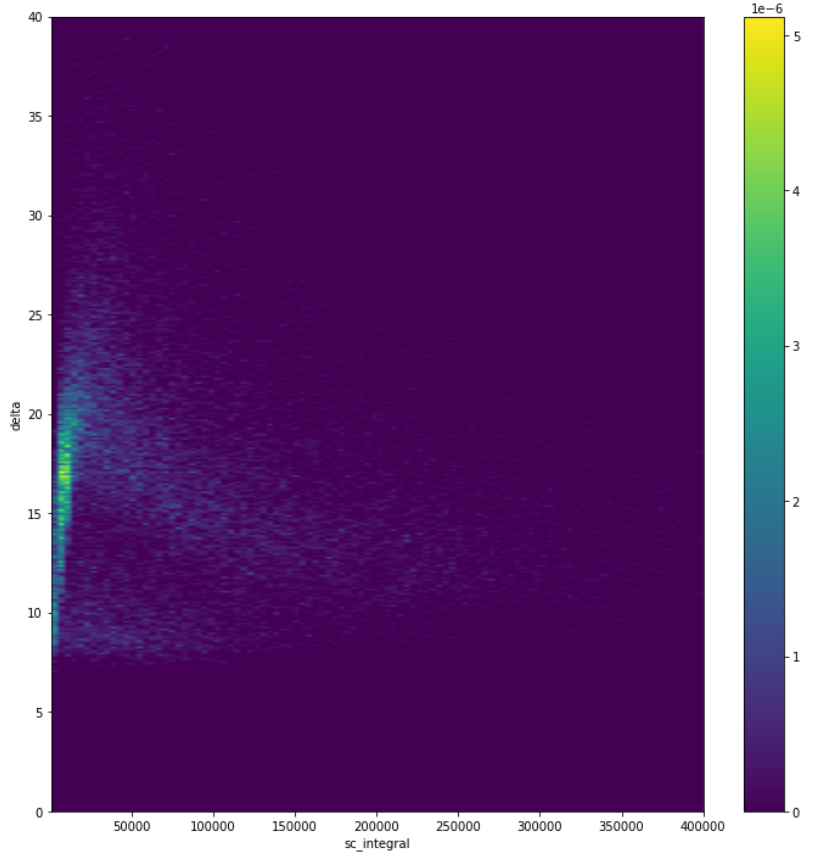
MC

Major difference in Run 1; MC does not reproduce the correct gain? (Here 420 V, Run 2 and Run 3 are 440 V)

Delta MC/data – Run 2

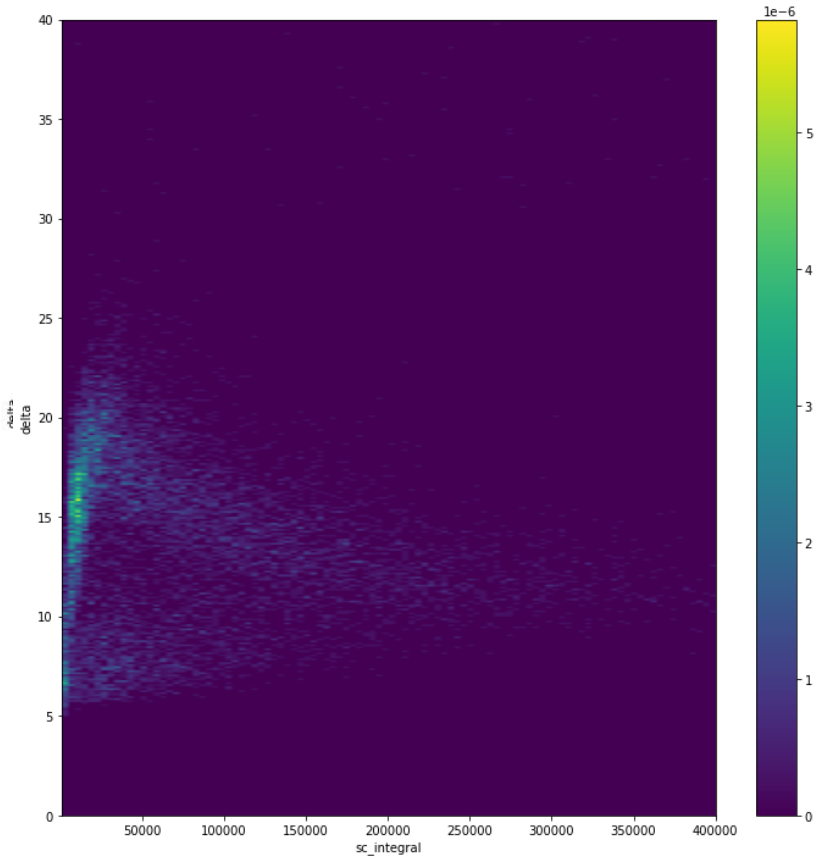


Data

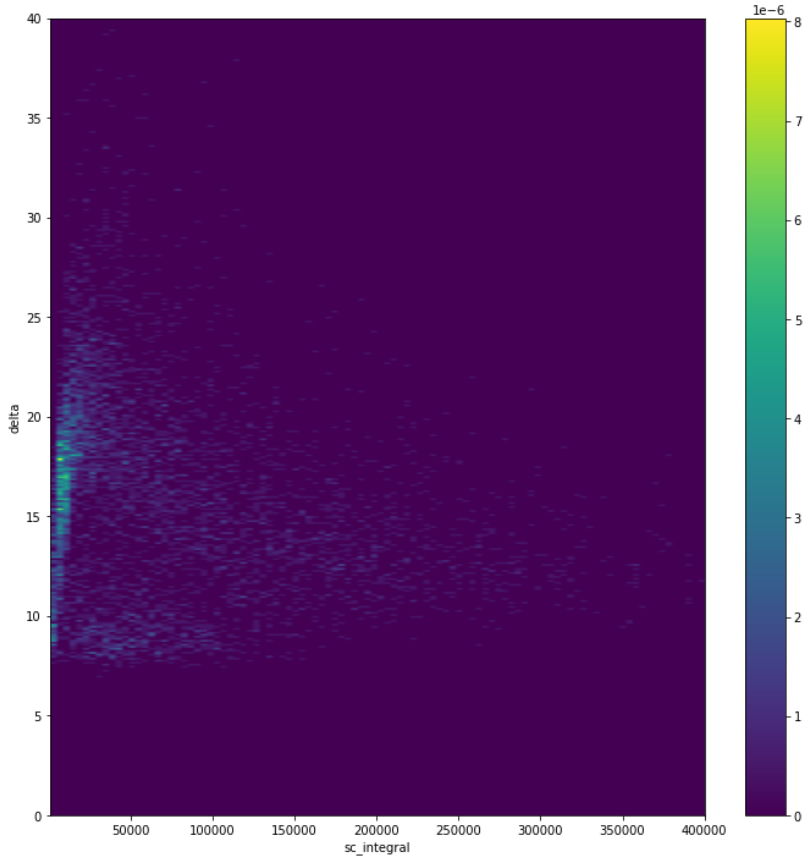


MC

Delta MC/data – Run 3



Data



MC

Alphas

- The presence of an excess of alphas indicates a radioactive contamination -> also beta and gamma, which populate especially the lower energy region
- This contamination is present in principle in all Runs, but it is particularly relevant in Run 3 because of the suppression of the external background
- After cutting out delta<11, DATA – MC = 0.025 events/s (1 Bq/m3 in LIME gas)