

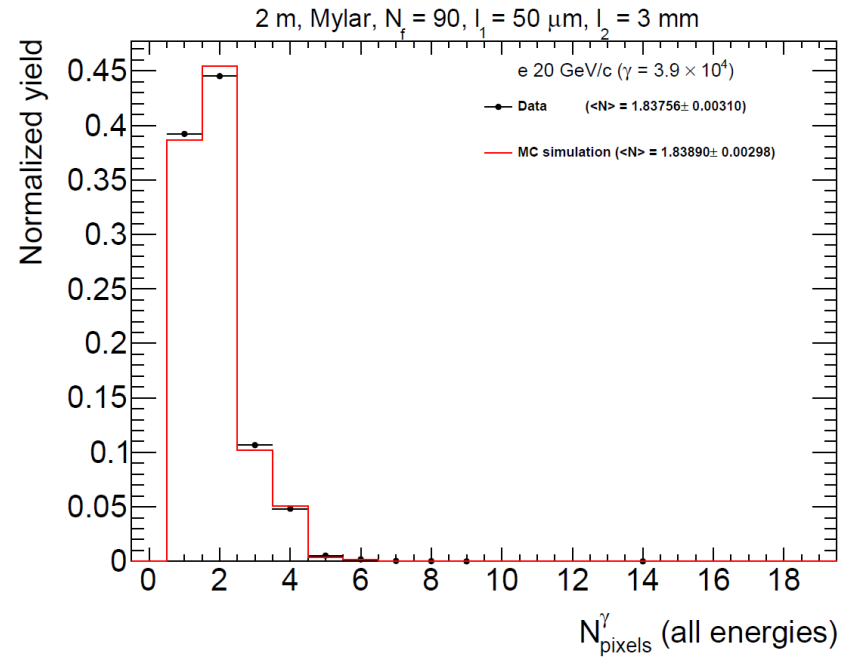
Size of TR Cluster problem in standalone MC

Popov Vladimir

TRD test beam analysis meeting 26.06.2024

The initial diffusion coefficients were selected so that there would be agreement between the MC and the 2018 data for MY 50 μm AIR 3000 μm N = 90 (distribution of TR cluster size for all energies).

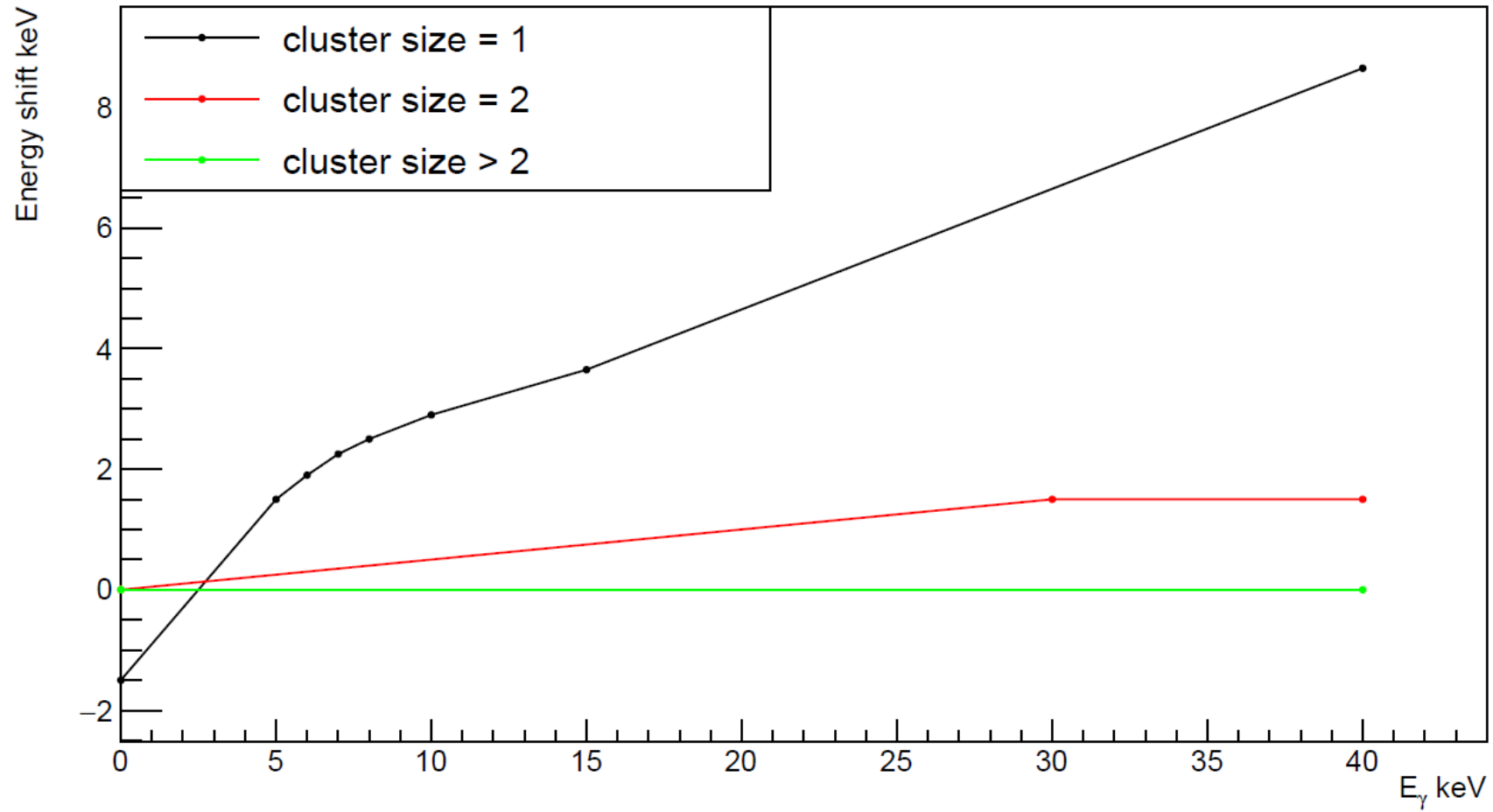
$$\sigma_0 = 0.018 \cdot E^{1.7}$$



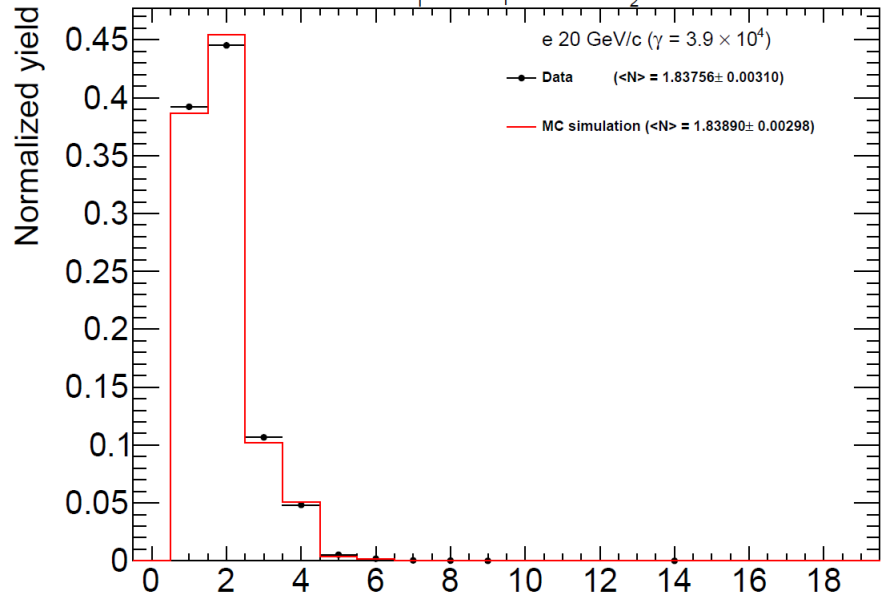
To match the energy spectra, the energies were adjusted using an energy shift.

$$E_{true} = E + (Energy\ shift)$$

Energy shift

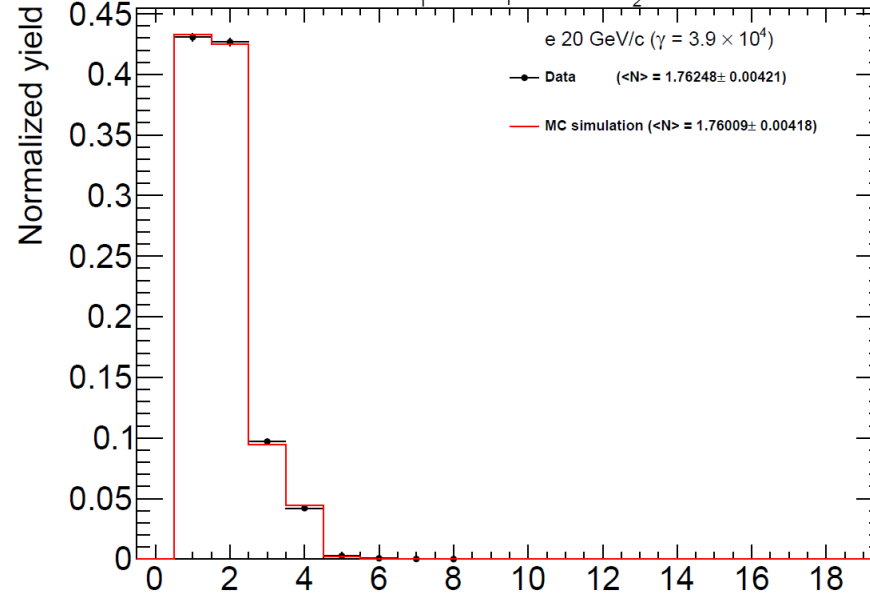


2 m, Mylar, $N_f = 90$, $l_1 = 50 \mu\text{m}$, $l_2 = 3 \text{ mm}$



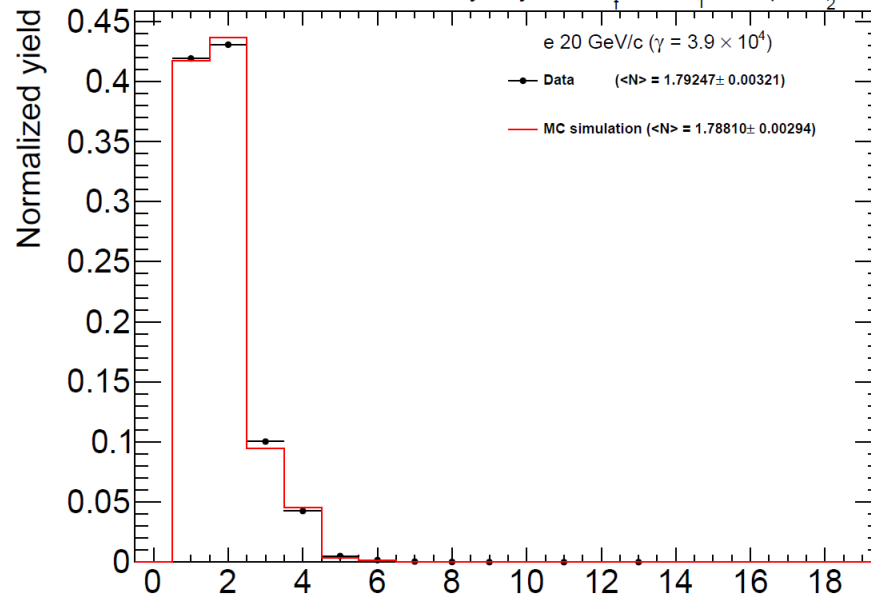
N_{pixels}^γ (all energies)

2 m, Mylar, $N_f = 30$, $l_1 = 50 \mu\text{m}$, $l_2 = 3 \text{ mm}$

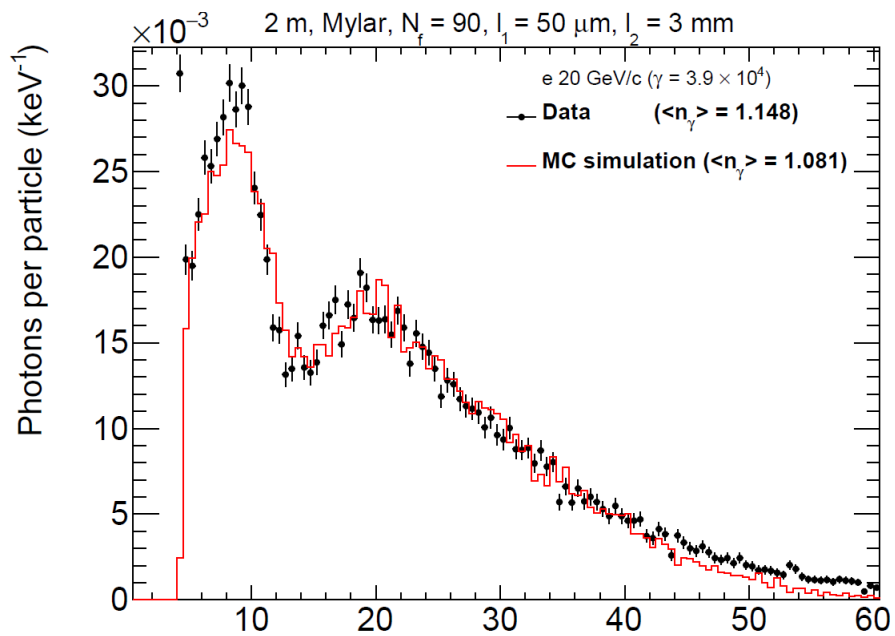


N_{pixels}^γ (all energies)

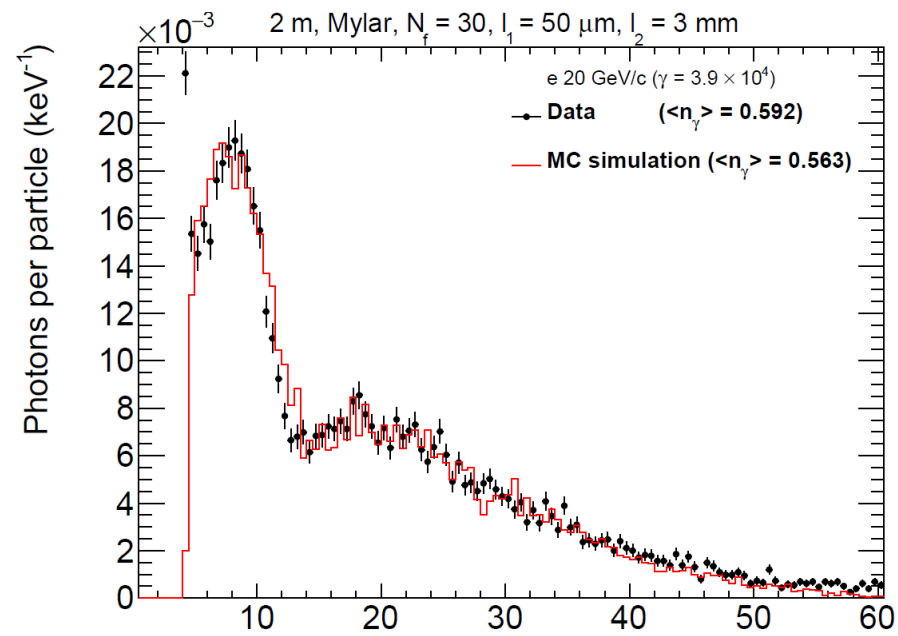
2 m, Polyethylene, $N_f = 90$, $l_1 = 67 \mu\text{m}$, $l_2 = 3 \text{ mm}$



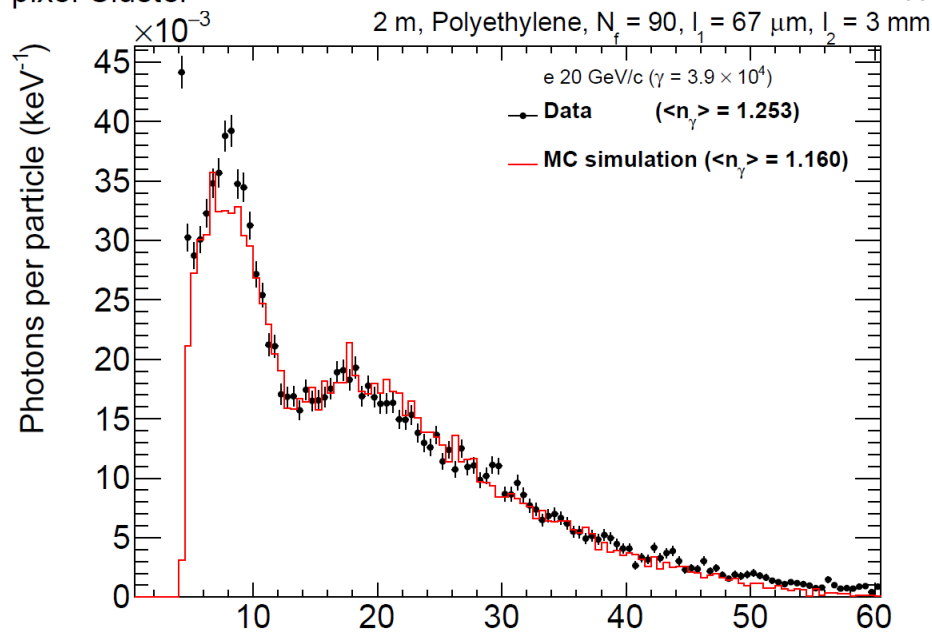
N_{pixels}^γ (all energies)



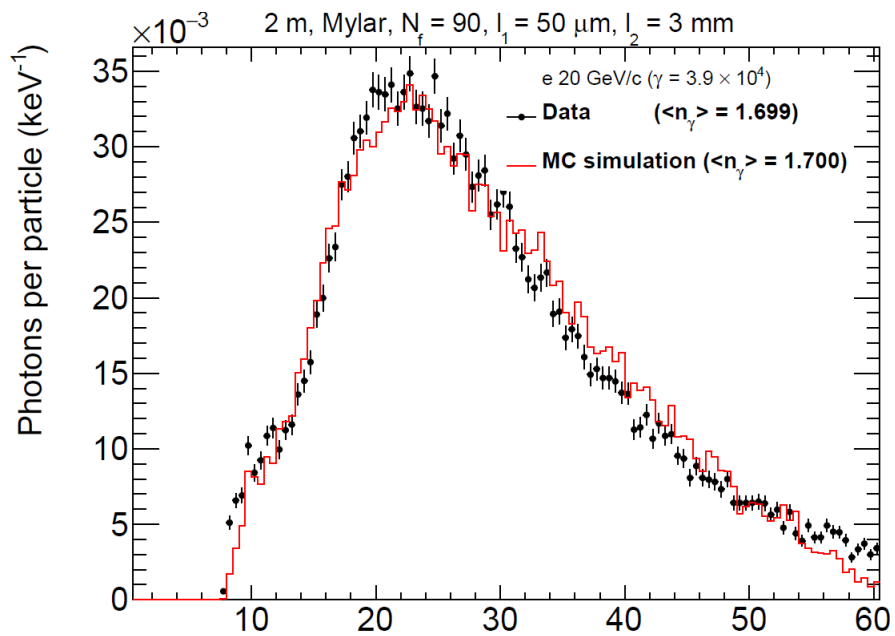
TR energy (keV) only 1 pixel Cluster



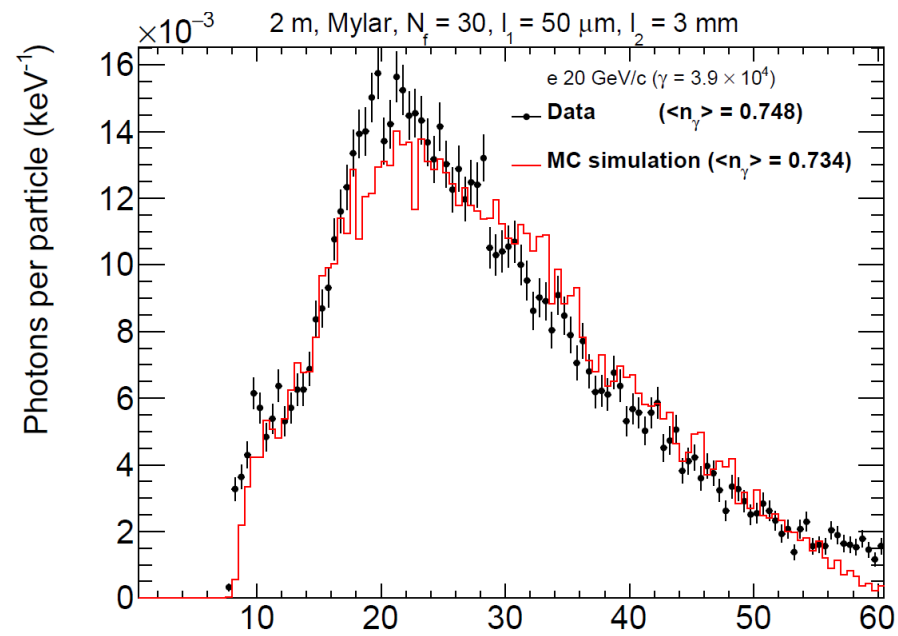
TR energy (keV) only 1 pixel Cluster



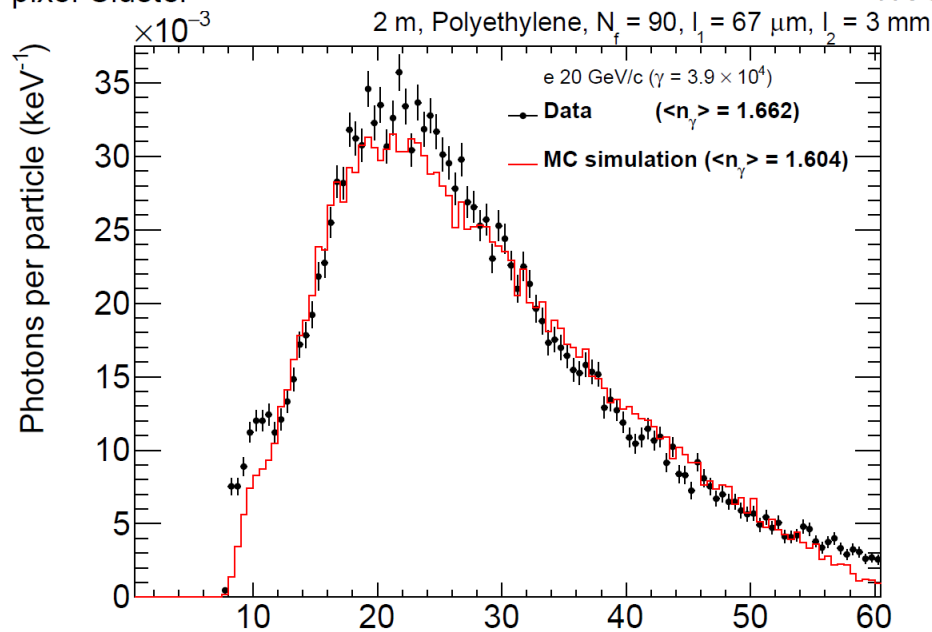
TR energy (keV) only 1 pixel Cluster



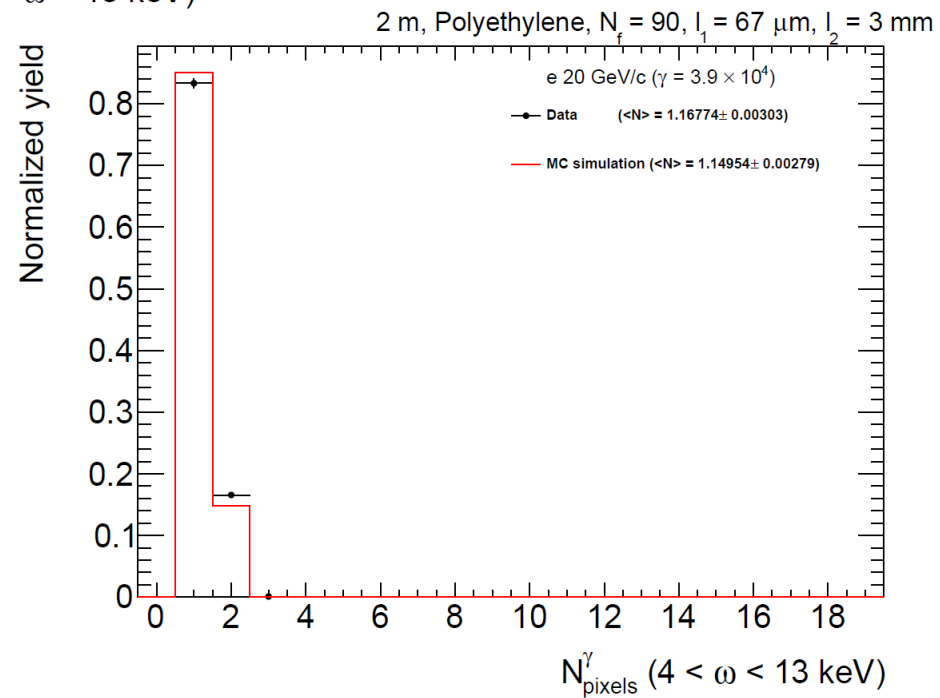
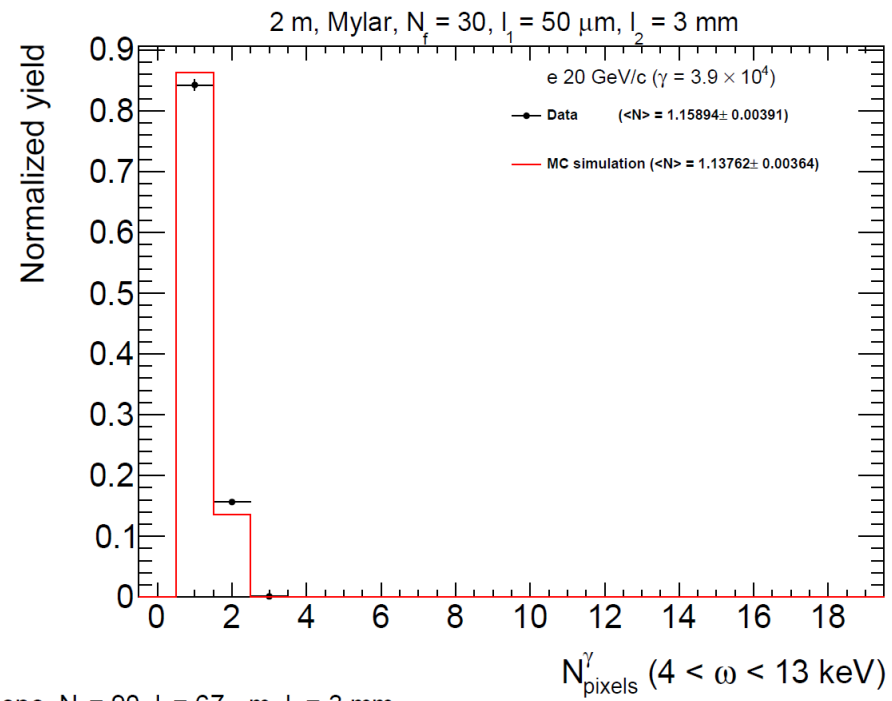
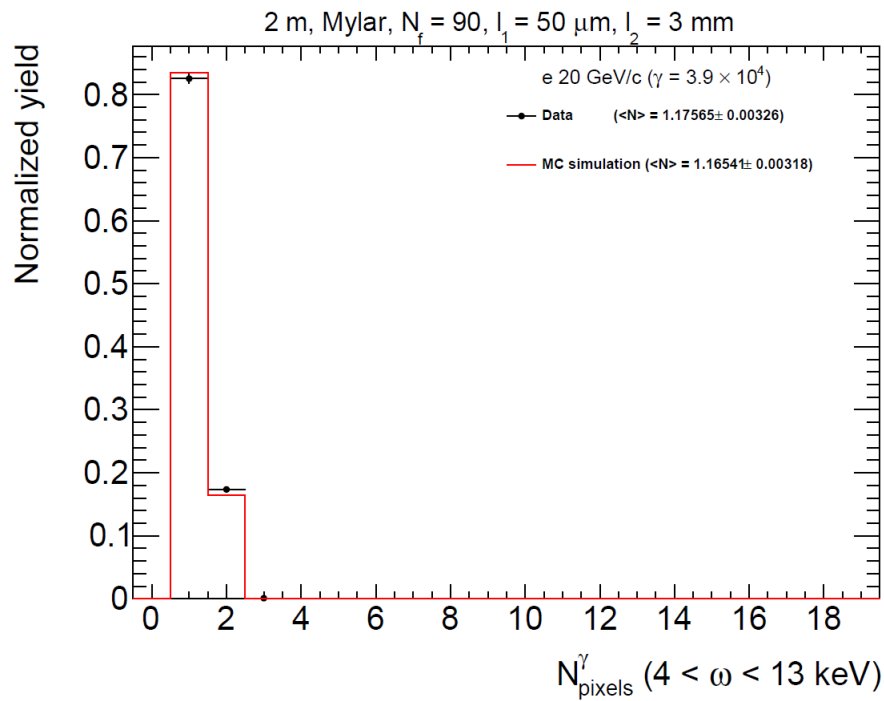
TR energy (keV) all but 1 pixel Cluster

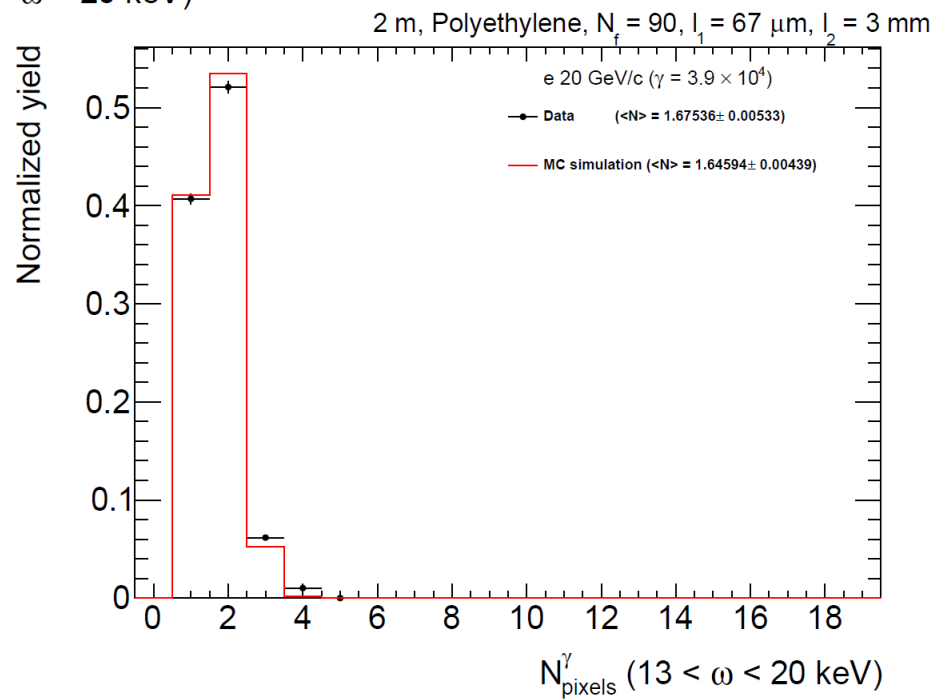
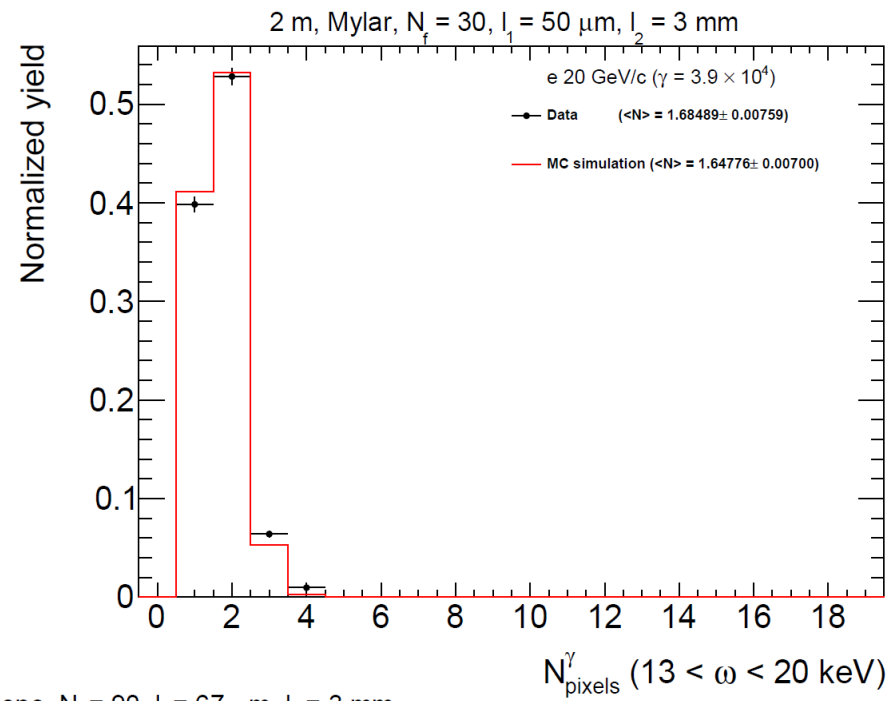
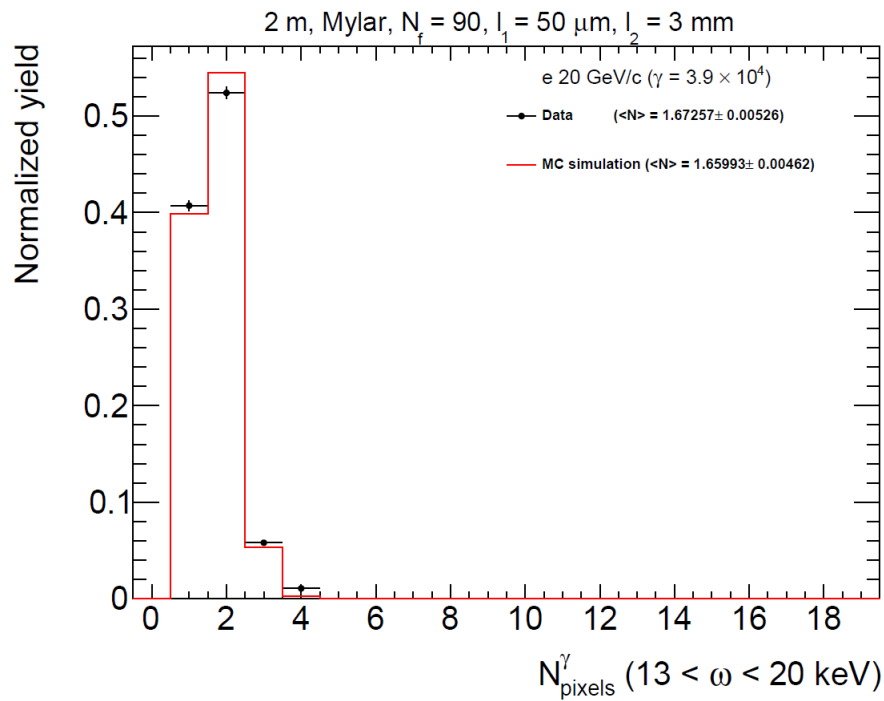


TR energy (keV) all but 1 pixel Cluster

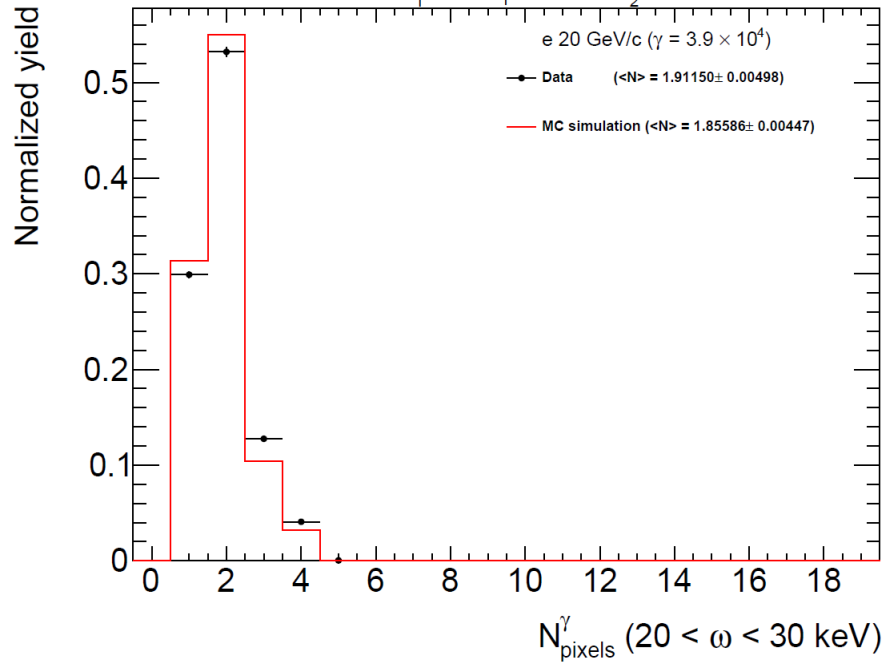


TR energy (keV) all but 1 pixel Cluster

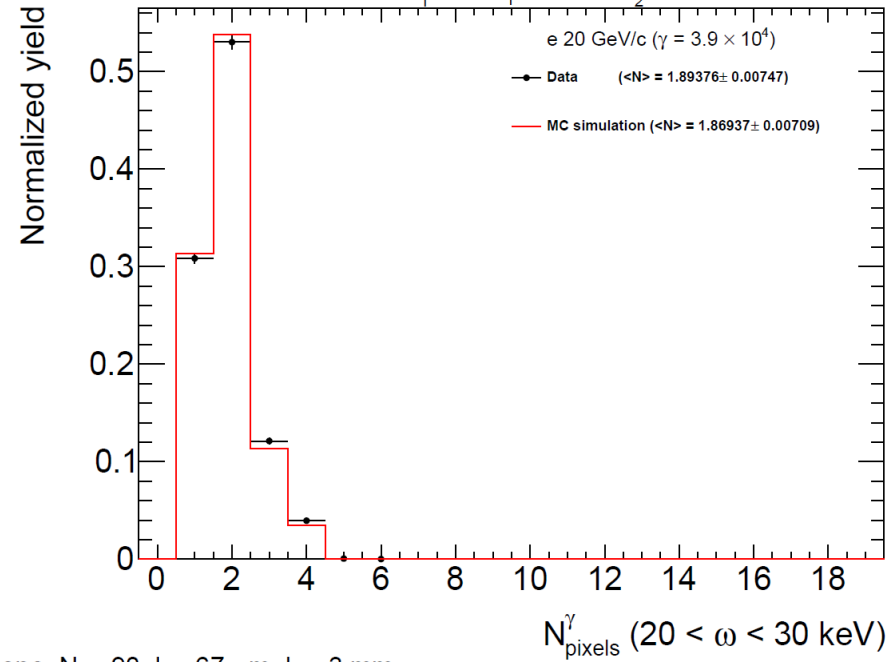




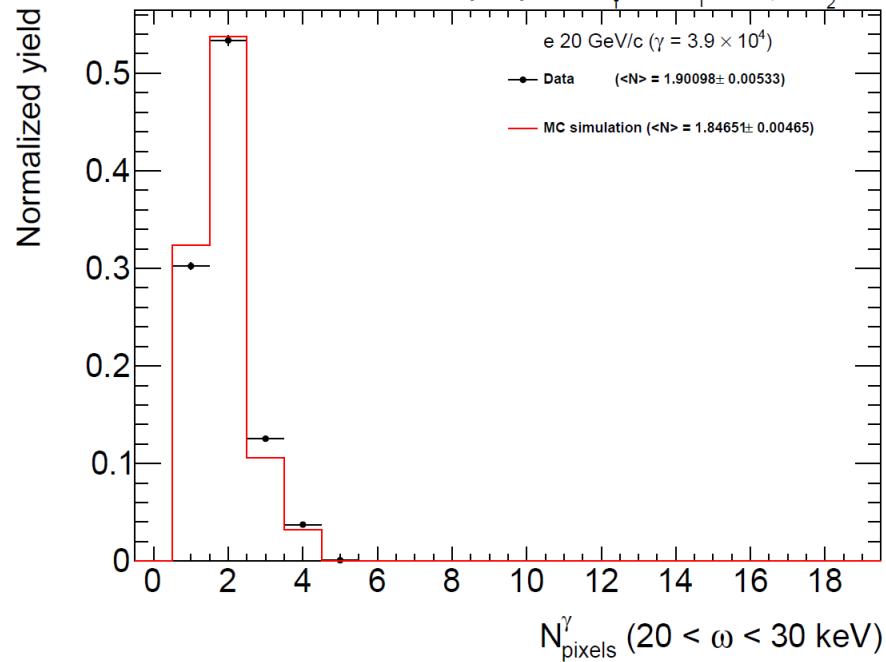
2 m, Mylar, $N_f = 90$, $l_1 = 50 \mu\text{m}$, $l_2 = 3 \text{ mm}$



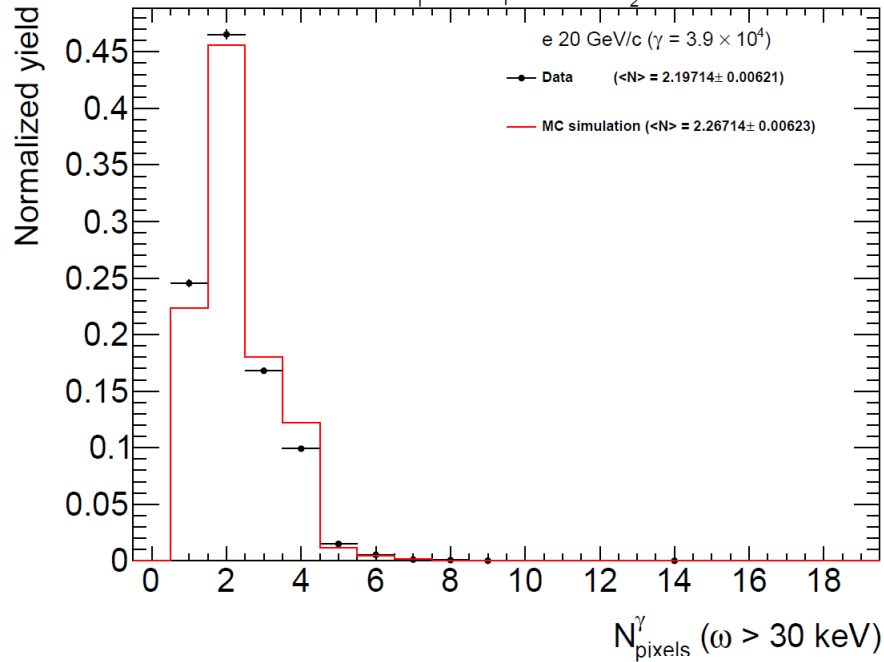
2 m, Mylar, $N_f = 30$, $l_1 = 50 \mu\text{m}$, $l_2 = 3 \text{ mm}$



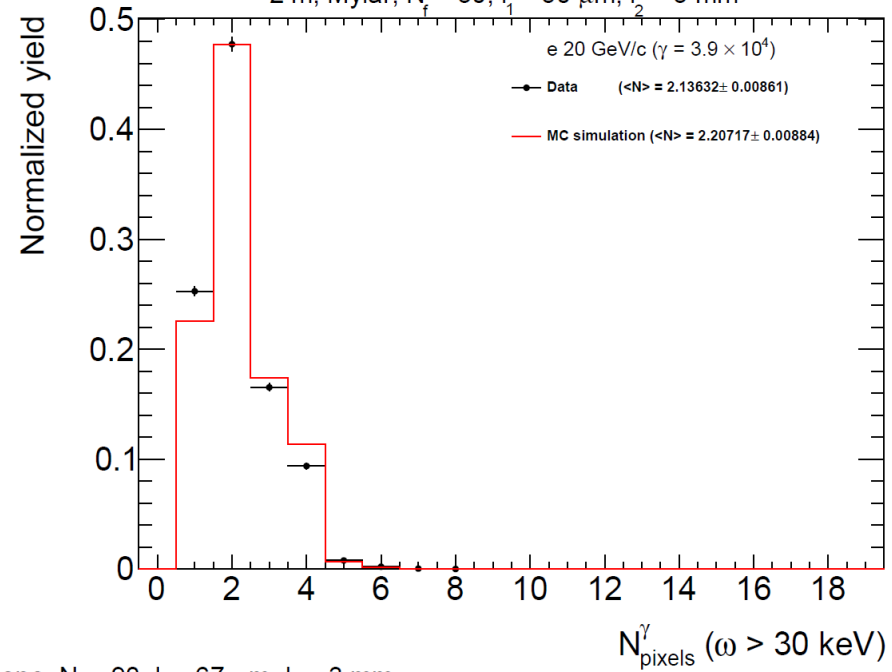
2 m, Polyethylene, $N_f = 90$, $l_1 = 67 \mu\text{m}$, $l_2 = 3 \text{ mm}$



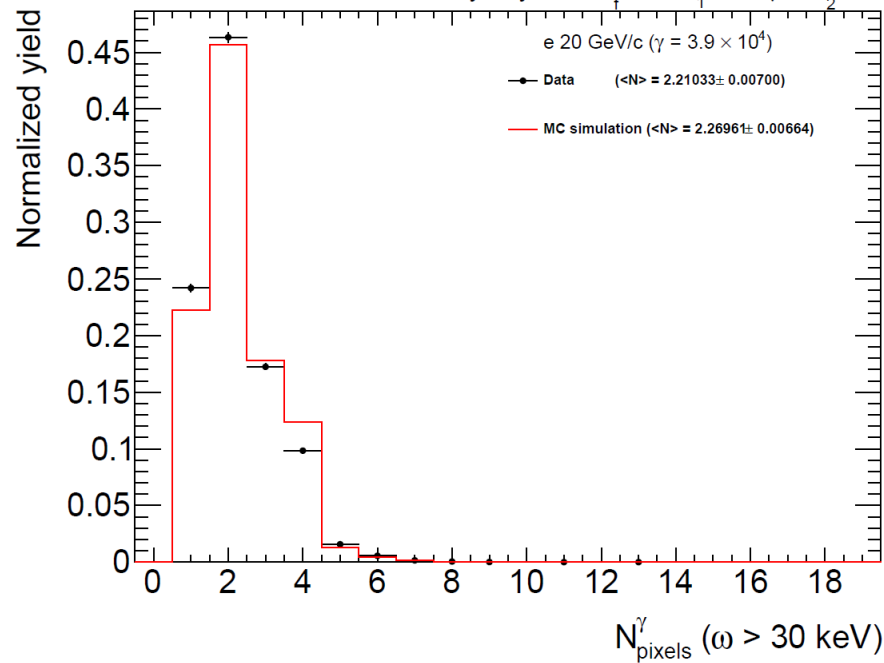
2 m, Mylar, $N_f = 90$, $l_1 = 50 \mu\text{m}$, $l_2 = 3 \text{ mm}$



2 m, Mylar, $N_f = 30$, $l_1 = 50 \mu\text{m}$, $l_2 = 3 \text{ mm}$



2 m, Polyethylene, $N_f = 90$, $l_1 = 67 \mu\text{m}$, $l_2 = 3 \text{ mm}$



The proposed initial diffusion and energy shift are relatively well suited for PE $N=90$, $l_1=67$ microns, and MY $N=30$, $l_1=50$ microns, although initially these parameters were selected for MY $N=90$ $l_1=50$.