Online monitoring & fluorescence merging

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TRD test beam analysis meeting
December 18, 2019
Runs 32+51 (2.08925 m, electrons, 30 Mylar foils, 50 μm / 3 mm)

Reconstructed (with TRD_UnifiedFormat) and analyzed with various options:

- sides & corners, no fluorescence merging;
- sides & corners, fluorescence merging @ \( r = 200 \) microns;
- sides only, no fluorescence merging;
- sides only, fluorescence merging @ \( r = 200 \) microns.

The usual sets of histograms for each of these four cases are ready.
Energy spectra

Sides & corners

- No fluorescence merging
- Fluorescence merging @ $r = 200 \, \mu m$

39299 photons
38872 photons

Sides only

- No fluorescence merging
- Fluorescence merging @ $r = 200 \, \mu m$

40853 photons
40065 photons

Integrals include the overflows!
Cluster composition

Sides & corners

- No fluorescence merging
- Fluorescence merging @ $r = 200 \, \mu m$

Sides only

- No fluorescence merging
- Fluorescence merging @ $r = 200 \, \mu m$
FL-TR distances

![Graph showing FL-TR distances for sides only and sides & corners. The x-axis represents the distance between merged FL-TR pairs in micrometers, and the y-axis represents the number of merged clusters. The graph compares the distribution of distances for the two categories.]
FL-TR distances

Where did these five photons go?
Interplay between corner clusterization and FL merging

Case 1: 
- sides only: \( E_{\text{middle}} = 9.7 \text{ keV} \), \( E_{\text{right}} = 9.5 \text{ keV} \) → FL merging → contributes to that histogram
- sides+corners: \( E + E \) → FL merging with the violet one → contributes to that histogram, but to a different bin since the distance between the merged clusters is not 110 microns any longer

Case 2: 
- sides only: \( E_{\text{left}} = 8.3 \text{ keV} \), \( E_{\text{middle}} = 64.5 \text{ keV} \) → FL merging → contributes to that histogram
- sides+corners: \( E + E \) → FL merging with the blue one → contributes to that histogram, but to a different bin since the distance between the merged clusters is not 110 microns any longer

Case 3: 
- sides only: \( E_{\text{left}} = 10.4 \text{ keV} \), \( E_{\text{right}} = 25.1 \text{ keV} \) → FL merging → contributes to that histogram
- sides+corners: \( E = 35.5 \text{ keV} \) → no FL merging → does not contribute to that histogram

Case 4: 
- sides only: \( E_{\text{left}} = 16.8 \text{ keV} \), \( E_{\text{right}} = 8.0 \text{ keV} \) → FL merging → contributes to that histogram
- sides+corners: \( E = 24.8 \text{ keV} \) → no FL merging → does not contribute to that histogram

Case 5: 
- sides only: \( E_{\text{left}} = 8.8 \text{ keV} \), \( E_{\text{right}} = 26.2 \text{ keV} \) → FL merging → contributes to that histogram
- sides+corners: \( E = 35.1 \text{ keV} \) → no FL merging → does not contribute to that histogram
THANKS!