Run1-2-3-4 preliminary comparison

Run 1

A	B	C	D	E	F	G	H	I	J
Numbers	Date	Description	PMT	Source	Gas Flux	PMT Thr	WHO	Reco?	WHY?
3000-3003		Scan HV PMT	Yes	None	20 l/h	15 mV		Yes	
3161-3201		BKG: first study, crashed after 40 runs	Yes	None	20 l/h	15 mV		Yes	
3358-3551		BKG	Yes	None	20 l/h	15 mV		Yes	
3554-3568		BKG: first study, crashed after 18 runs	Yes	None	20 l/h	15 mV		Yes	
3569-4128		BKG	No	None	20 l/h	15 mV		Yes	
4141-4143		scan HVGEM All	Yes	55Fe	20 l/h	15 mV		Yes	
4366-4381		Test Trigger	Yes	55Fe	20 l/h	15 mV		Yes	
4145-4201		scan Z, scan VGEM1 with pmt Trg: LVL2, 15mV thr, veto 10 us	Yes	55Fe	20 l/h	15 mV		Yes	check efficiency
4257-4266		scan Z, scan VGEM1with pmt Trg: LVL2, 15mV thr, veto 10 us	Yes	55Fe	20 l/h	15 mV		Yes	
4271-4302		scan Z, scan VGEM1 with pmt Trg: LVL2, 15mV thr, veto 10 us	Yes	55Fe	20 l/h	15 mV		Yes	
3009-3116		stability while flushing gas (Z=5cm)	Yes	55Fe	20 l/h	15 mV		Yes	stability of the response while starting the gas flow
3125-3160		stability while flushing gas (Z=25cm)	Yes	55Fe	20 l/h	15 mV		Yes	
4202-4256		stability (Z=25cm), thr 15 mV	Yes	55Fe	20 l/h	15 mV		Yes	history of 55Fe response (light, n clusters, cluster size). Check T, P. Data taking conditins stable with 15 mV PMT threshold for trigger and flux = 20l/h
4314-4365		stability (Z=25cm), thr 15 mV	Yes	55Fe	20 l/h	15 mV		Yes	
4391-4468		stability (Z=25cm), thr 15 mV	Yes	55Fe	20 l/h	15 mV		Yes	
4469-4475		stability (Z=25cm), thr 5 mV	Yes	55Fe	20 l/h	5 mV		Yes	as above with PMT thr = 5 mV. Maybe same as above for images
4493-4511		stability (Z=25cm), thr 5 mV	Yes	55Fe	20 l/h	5 mV		Yes	
4512-4780		55Fe: stability (Z=25cm), thr 5 mV, flux 3l/h	Yes	55Fe	3 l/h	5 mV		Yes	Stability with different gas fluxes
5107-5162		55Fe: (Z = 25 cm) thr 5 mV, flux 20l/h, after operations on gas system	Yes	55Fe	20 l/h	5 mV		Yes	
5163-5174		55Fe: (Z = 25 cm) thr 5 mV, flux 1l/h, after operations on gas system	Yes	55Fe	1 l/h	5 mV		Yes	
5175-5178		WARNING: the sequencer was on while the cap was removed, the data of these runs could be thrash	Yes	55Fe	1 l/h	5 mV		Yes	
5179-5366		55Fe: (Z = 25 cm) thr 5 mV, flux 1l/h	Yes	55Fe	1 l/h	5 mV		Yes	
5377-5491		55Fe: (Z = 25 cm) thr 5 mV, flux 1l/h - new PMT HV (part 1)	Yes	55Fe	1 l/h	5 mV		Yes	
5507-5565		55Fe: (Z = 25 cm) thr 5 mV, flux 1l/h - new PMT HV (part 2)	Yes	55Fe	20 l/h	5 mV		Yes	
5566-5650		55Fe: (Z = 25 cm) thr 5 mV, flux 1l/h - new PMT HV (part 2)	Yes	55Fe	10 l/h	5 mV			
5652-5692		55Fe: (Z = 25 cm) thr 5 mV, flux 10 l/h - new PMT HV - to study the effect of new gas	Yes	55Fe	10 l/h	5 mV		Yes	
5694-5730		55Fe: (Z = 25 cm) thr 5 mV, flux 10 l/h - new PMT HV - stable	Yes	55Fe	10 l/h	5 mV		Yes	
4475-4492	2022-11-17	BKG: 5 mV, flux 20l/h	Yes	None	20 l/h	5 mV		Yes	Golden runs with different gas fluxes.
4782-4935	2022-11-21	BKG: 5 mV, flux 3l/h	Yes	None	3 l/h	5 mV		Yes	
5001-5106	2022-11-22	BKG: 5 mV, thr 5 mV, flux 3l/h	Yes	None	3 l/h	5 mV		Yes	
5741-5908	2022-12-01	BKG: thr 2 mV, flux 10 l/h - new PMT HV - (part 1)	Yes	None	10 l/h	2 mV		Yes	
5922-6287	2022-12-02	BKG: thr 2 mV, flux 10 l/h - new PMT HV - (part 2)	Yes	None	10 l/h	2 mV		Yes	
6288 - 6744	2022-12-04	BKG: thr 2 mV, flux 10 l/h - new PMT HV - (part 2) - no DGTZ	Yes	None	10 l/h	2 mV		Yes	
4936-4947		55Fe: 100 ms exposure, thr 5 mV, flux 3l/h	Yes	55Fe	3 l/h	5 mV		Yes	Test with 100 ms exposure
4949-4963		55Fe: (Z = 5 cm) thr 5 mV, flux 3l/h, test equalization	Yes	55Fe	3 l/h	5 mV		Yes	PMT studies (rate)
4964-4972		55Fe: (Z = 25 cm) thr 100 mV, flux 3l/h	Yes	55Fe	3 l/h	5 mV		Yes	
4973-4977		55Fe: (Z = 25 cm) thr 75 mV, flux 3l/h	Yes	55Fe	3 l/h	5 mV		Yes	
4978-4982		55Fe: (Z = 25 cm) thr 50 mV, flux 3l/h	Yes	55Fe	3 l/h	5 mV		Yes	
4983-4987		55Fe: (Z = 25 cm) thr 200 mV, flux 3l/h	Yes	55Fe	3 l/h	5 mV		Yes	
4988-4992		55Fe: (Z = 25 cm) thr 255 mV, flux 3l/h	Yes	55Fe	3 l/h	5 mV		Yes	
4993-5000		55Fe: (Z = 25 cm) thr 5 mV, flux 3l/h, scan drift field	Yes	55Fe	3 l/h	5 mV		Yes	Drift field scan
5732-5740		55Fe: (Z = 25 cm) thr 2 mV, flux 10 l/h - new PMT HV - Drift Field Scan	Yes	55Fe	10 l/h	2 mV		Yes	
5910-5921		55Fe: (Z = 25 cm) thr 2 mV, flux 10 l/h - new PMT HV - PMT HV Scan	Yes	55Fe	10 l/h	2 mV		Yes	

Run 2

- Runs **11289 - 11582** (Bkg and Pedestal)
- Runs **11591 - 11951** (Bkg and Pedestal)
- Runs **11960 - 12165** (Bkg and Pedestal)

Run 3

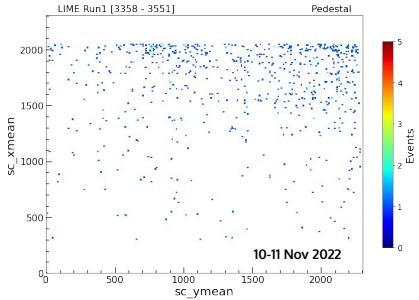
Start	Stop	Numbers			Description	Data runs	Data pics
2023-05-16 17:34:57	2023-05-16 18:11:26	19675	-	19691	Daily Calibration	-	-
Issue with the **booster**: sudden increase of humidity and too many hotspot to continue the data taking							
2023-05-20 11:16:18	2023-05-21 0:18:49	19704	-	19891	Stability	149	60005
2023-05-21 16:30:45	2023-05-22 16:17:07	19902	-	19908	Daily Calibration	-	-
2023-05-22 16:20:26	2023-05-23 12:31:49	19909	-	20067	Bkg	133	53455
2023-05-23 12:36:17	2023-05-23 13:26:35	20068	-	20074	Daily Calibration	-	-
2023-05-23 13:29:43	2023-05-24 14:59:51	20075	-	20277	Bkg	177	71138
2023-05-24 15:05:03	2023-05-24 15:46:29	20278	-	20284	Daily Calibration	-	-
2023-05-24 15:49:09	2023-05-25 9:06:39	20285	-	20415	Bkg	115	46184
Issue with the **pump**: it didn't restarted after technical intervention to fix the booster leakage							
2023-07-06 15:16:24	2023-07-07 18:52:12	20426	-	20816	Pedestal Study [GEMs OFF]	340	136940
2023-07-07 18:54:41	2023-07-12 10:10:41	20817	-	21041	Stability	112	45072
2023-07-12 14:47:29	2023-07-12 15:32:40	21049	-	21055	Daily Calibration	-	-
2023-07-12 15:37:53	2023-07-17 11:10:11	21056	-	22074	Bkg	862	346008
2023-07-17 11:14:10	2023-07-17 12:09:49	22075	-	22083	Daily Calibration	-	-
2023-07-17 12:29:04	2023-07-18 11:13:28	22084	-	22291	Bkg	184	74014
2023-07-18 11:16:48	2023-07-18 11:55:00	22292	-	22298	Daily Calibration	-	-
2023-07-18 12:00:51	2023-07-19 11:46:29	22299	-	22505	Bkg	182	73048
2023-07-19 11:48:55	2023-07-19 12:46:22	22506	-	22514	Daily Calibration	-	-
2023-07-19 12:51:52	2023-07-20 13:44:11	22515	-	22568	Stability	26	10493
Issue with the **pump**: it abruptly stopped working							
2023-07-25 12:15:46	2023-07-28 10:33:13	22570	-	22717	Stability	73	29432
2023-07-28 11:13:45	2023-07-28 11:51:10	22718	-	22724	Daily Calibration	-	-
2023-07-28 11:55:49	2023-07-31 12:11:05	22725	-	23350	Bkg	567	227938
2023-07-31 12:13:08	2023-07-31 12:50:11	23351	-	23357	Daily Calibration	-	-
2023-07-31 12:52:29	2023-08-01 14:42:19	23358	-	23579	Bkg	200	80382
2023-08-01 14:44:07	2023-08-01 15:27:10	23580	-	23586	Daily Calibration	-	-
2023-08-01 15:33:15	2023-08-02 11:54:39	23587	-	23760	Bkg	157	63111
2023-08-02 11:56:49	2023-08-02 12:41:09	23761	-	23767	Daily Calibration	-	-
2023-08-02 12:43:32	2023-08-02 14:50:34	23768	-	23800	Stability	29	11690

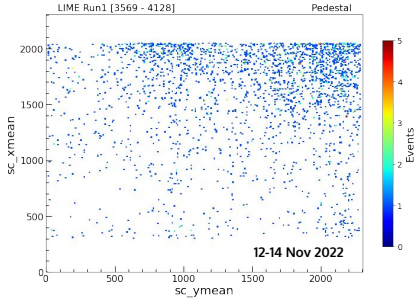
Run 4

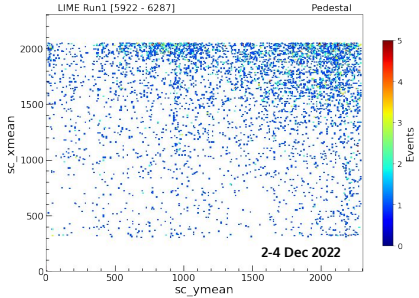
Start	Stop	Numbers			Description	Data runs	Data pics	Gas Flow	Filter Line 1	Filter Line2
2023-12-01 15:08	2023-12-04 9:39	40784	-	40917	Stability	133	53200	5	Blu	Not in use
2023-12-04 10:23	2023-12-14 16:40	40919	-	42848	Bkg + Daily Calibrations	1929	771600	5	Blu	Not in use
2023-12-14 18:07:07	2023-12-16 10:17:27	42863	-	43185	Bkg + Daily Calibrations Low GAIN	322	128800	5	Blu	Not in use
2023-12-16 23:50:59	2023-12-17 21:53:14	43186	-	43231	Stability + Daily Calibrations- LOW Gas Flow : 2 l/h	45	18000	2	Blu	Not in use
2023-12-17 22:45:16	2023-12-22 16:18:47	43232	-	43308	Stability + Daily Calibrations- LOW Gas Flow : 1 l/h	76	30400	1	Blu	Not in use
2023-12-17 22:45:16	2023-12-22 16:18:47	43316	-	43486	Stability + Daily Calibrations- LOW Gas Flow : 1 l/h	170	68000	1	Blu + Rosso	Not in use
2023-12-31		43502	-	43508	Daily Calibration			1	Blu + Rosso	Not in use
2024-01-02		43509	-	43515	Daily Calibration			1	Blu + Rosso	Not in use
2024-01-04		43517	-	43522	Daily Calibration			1	Blu + Rosso	Not in use
2024-01-06		43524	-	43529	Daily Calibration			1	Blu + Rosso	Not in use
2024-01-08		43531	-	43536	Daily Calibration			2	Blu + Rosso	Not in use
2024-01-10		43636	-	43641	Daily Calibration			2	Blu + Rosso	Not in use
2024-01-12		43732	-	43738	Daily Calibration			5	Blu + Rosso	Not in use
2024-01-14		43849	-	43855	Daily Calibration			5	Blu + Rosso	Not in use
2024-01-16		44047	-	44053	Daily Calibration			5	Blu + Rosso	Not in use
2024-01-17		44203	-	44209	Daily Calibration			5	Blu + Rosso	Not in use
2024-01-18		44367	-	44372	Daily Calibration			5	Blu + Rosso	Not in use
2024-01-19		44553	-	44559	Daily Calibration			5	Blu + Rosso	Not in use
2024-01-08 12:00:15	2024-01-08 18:38:15	43537	-	43701	Stability + Daily Calibrations- LOW Gas Flow : 2 l/h		0	2	Blu + Rosso	Not in use
2024-01-08 18:38:15	2024-01-15 9:00:00	43702	-	43885	Stability + Daily Calibrations- Gas Flow : 5 l/h		0	5	Blu + Rosso	Not in use
2024-01-15 9:11:14		43886	-		Bkg + Daily Calibrations		0	5	Blu + Rosso	Not in use

Clusters occupancy - Pedestal

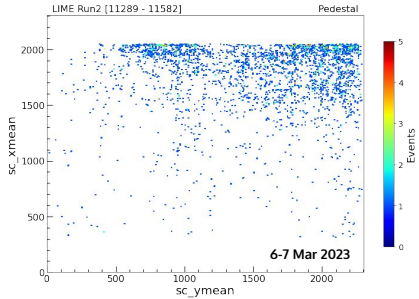
Run 1

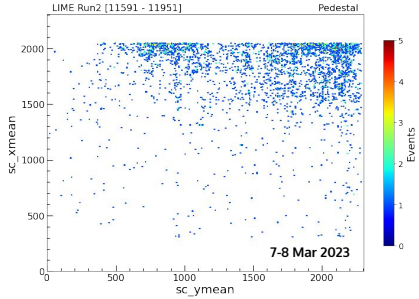


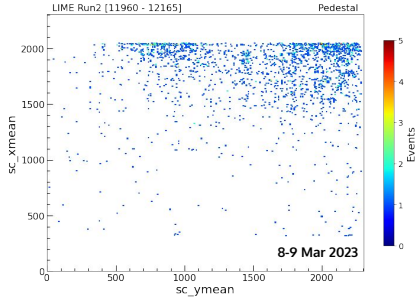




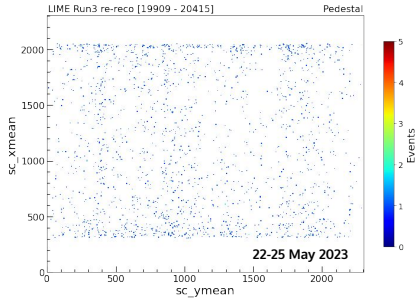
Run 2

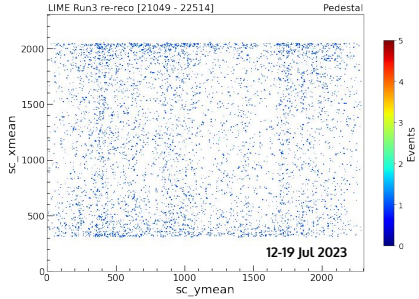


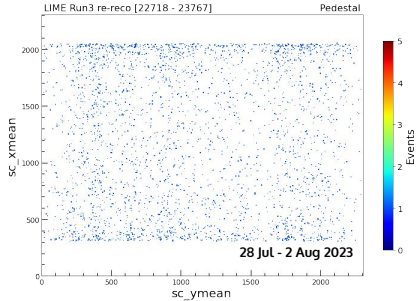




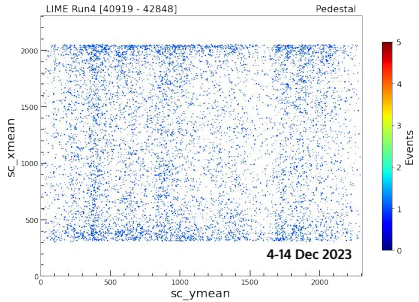
Run 3

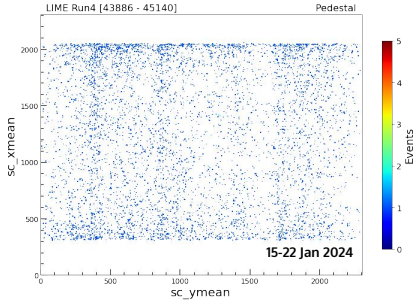






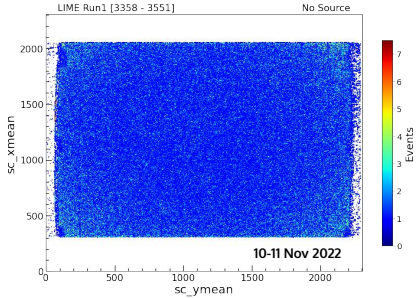
Run 4

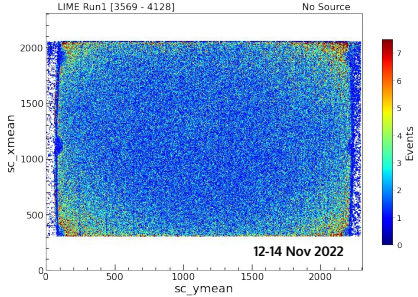


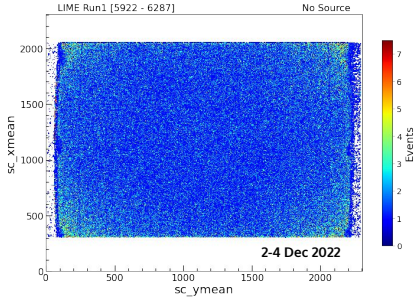


Clusters occupancy - Background

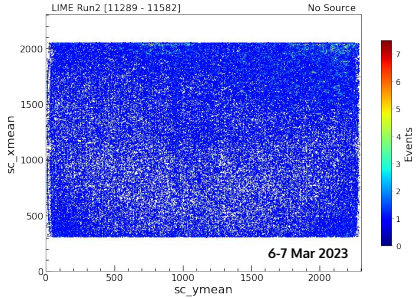
Run 1

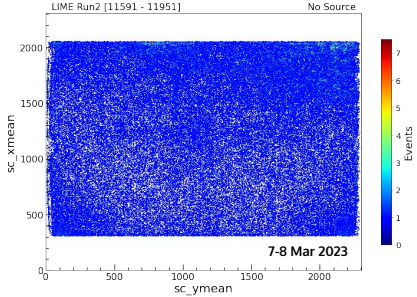


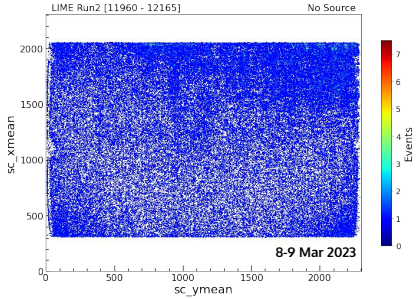




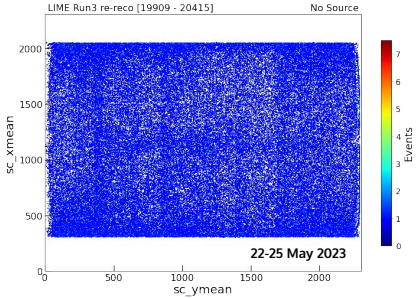
Run 2

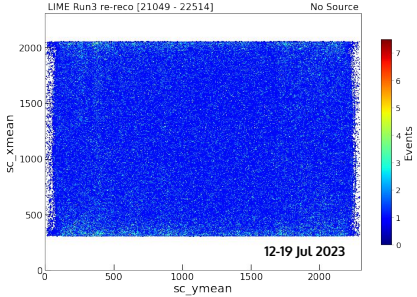


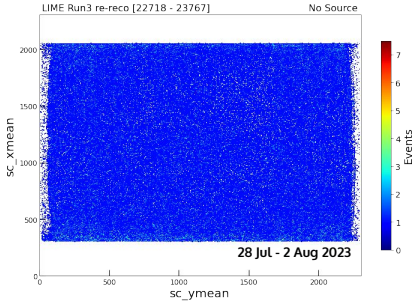




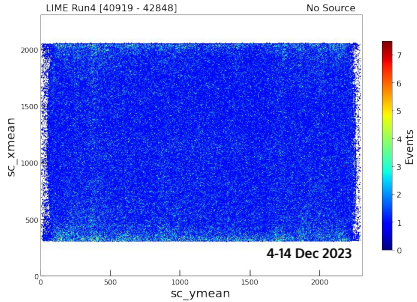
Run 3

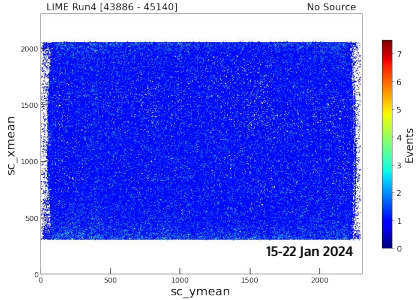






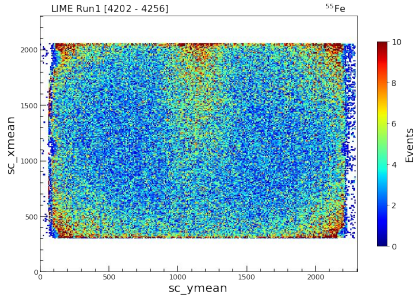
Run 4

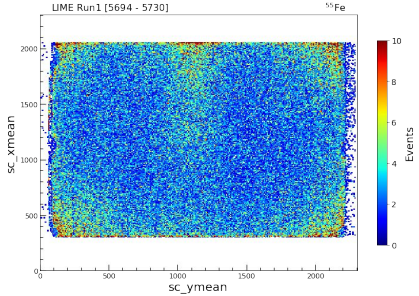




Clusters occupancy - ^{55}Fe

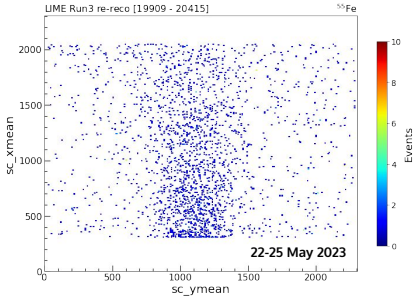
Run 1

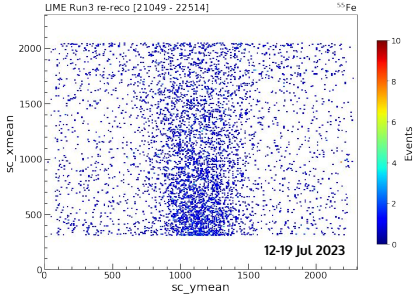


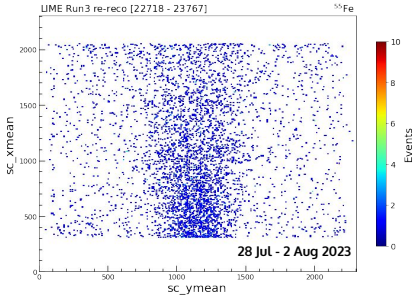


Run 2

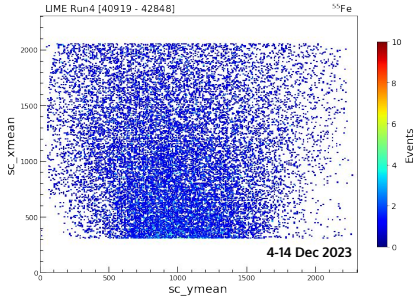
Run 3

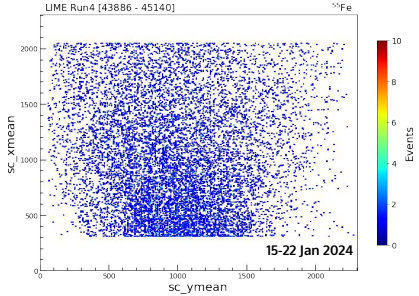






Run 4





Noise:

- sc_rms > 6
- sc_tgausssigma*0.152 > 0.5

Geometrical cut:

- sc_xmin > 250 & sc_xmax < 2050
- sc_ymin > 300 & sc_ymax < 2000

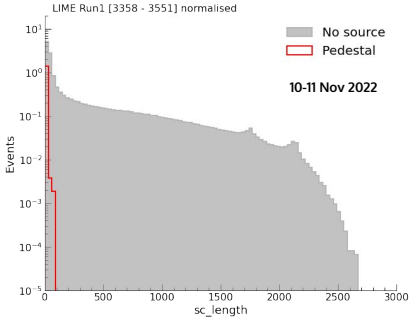
to be applied in the future →

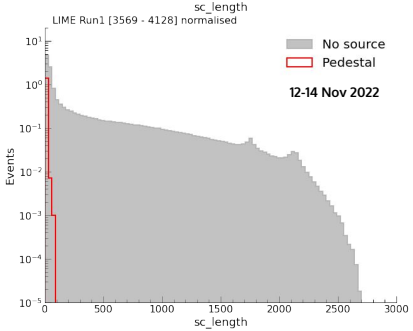
sc_xmin > 305 & sc_xmax < 2050 - (Run 1)
sc_xmin > ?? **& sc_xmax <** ?? - (Run 2 - to decide after checking ^{55}Fe runs)
sc_xmin > 255 & sc_xmax < 2000 (Run 3 and Run4)

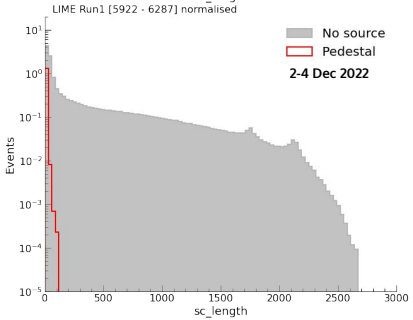
Length Histograms

‘sc_length’ - before cuts (normalised to the number of images)

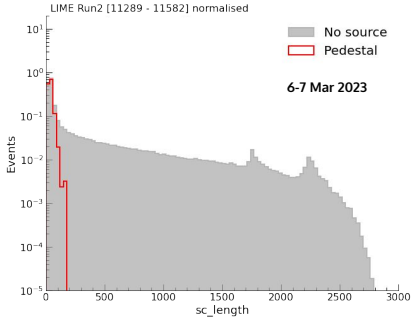
Run 1

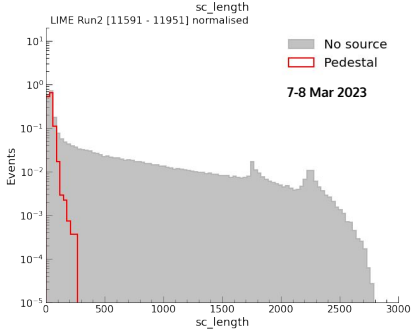


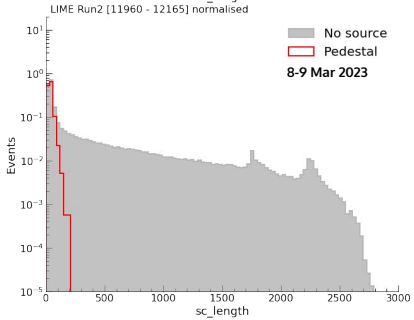




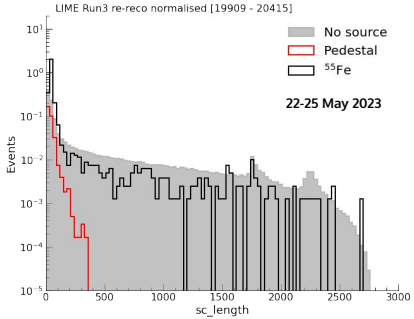
Run 2

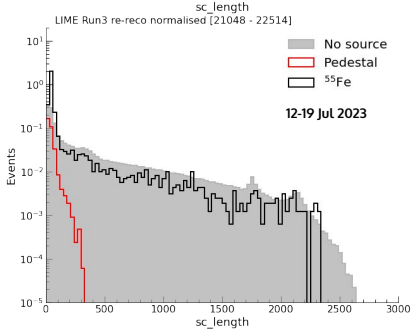


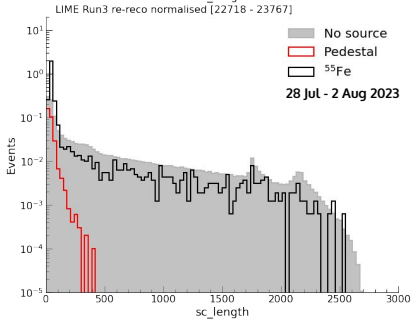




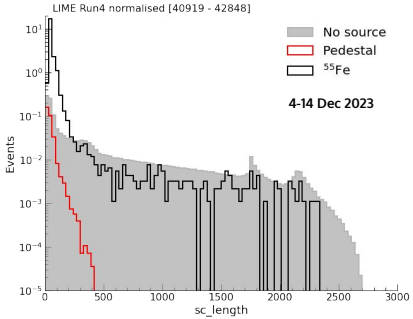
Run 3

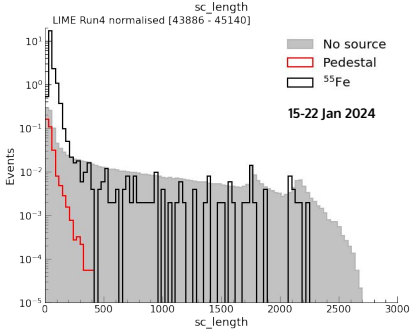






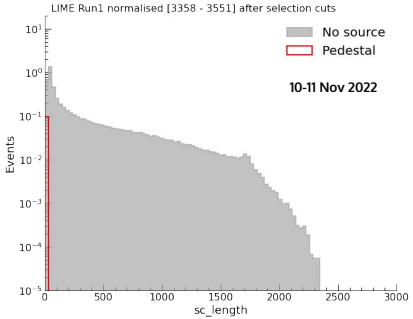
Run 4

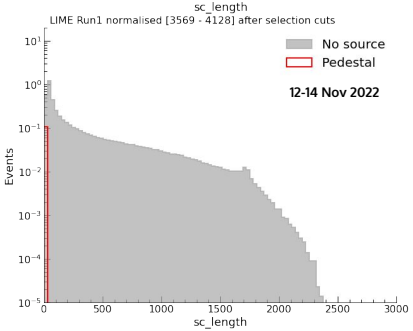


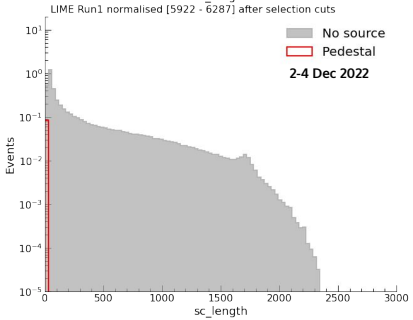


‘sc_length’ - after cuts (normalised to the number of images)

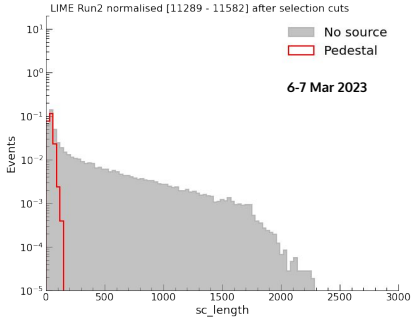
Run 1

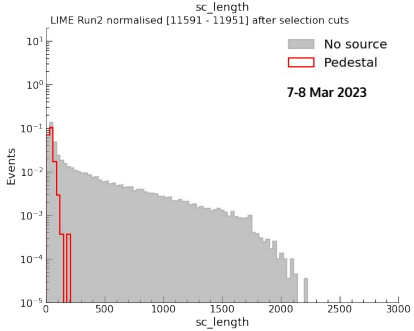


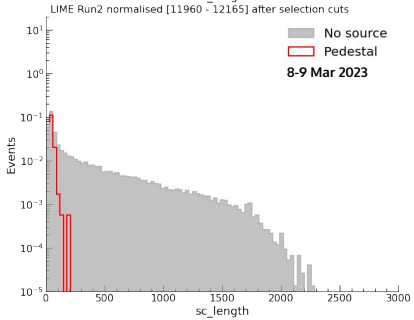




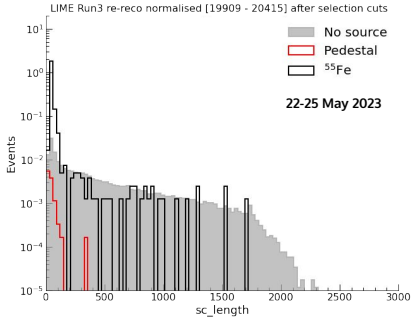
Run 2

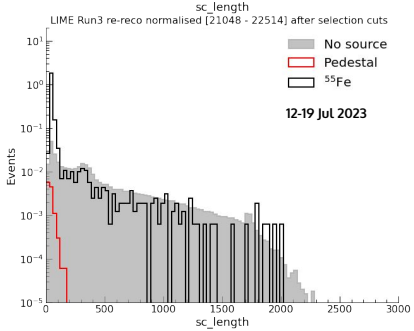


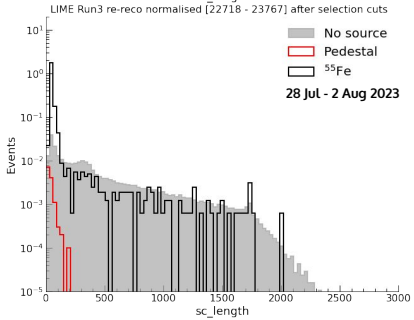




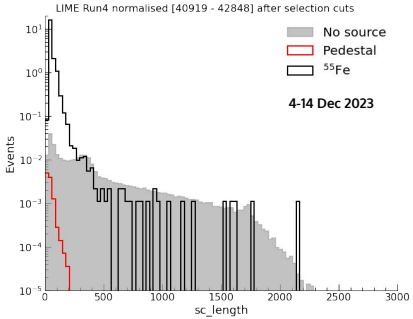
Run 3

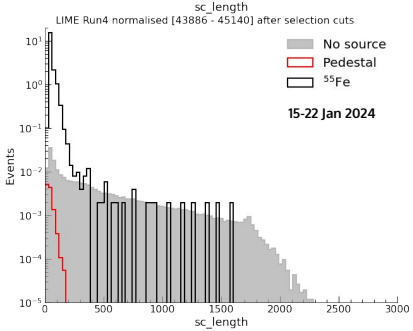






Run 4

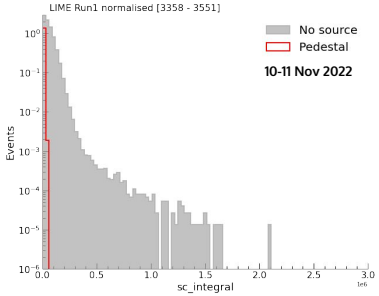


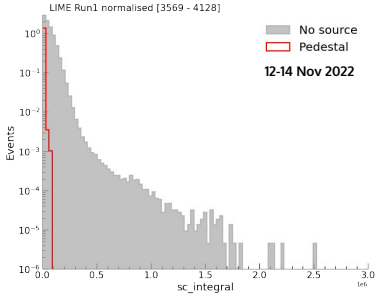


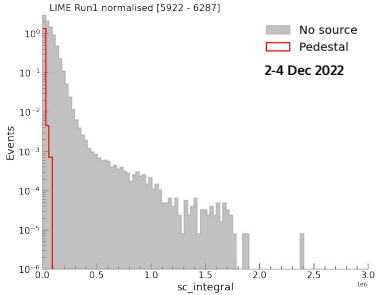
Energy Histograms

‘sc_integral’ - before cuts (normalised to the number of images)

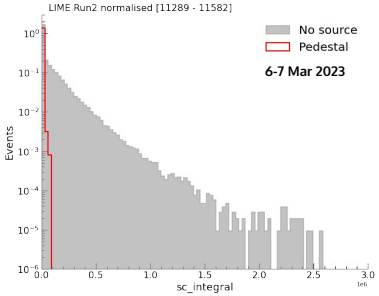
Run 1

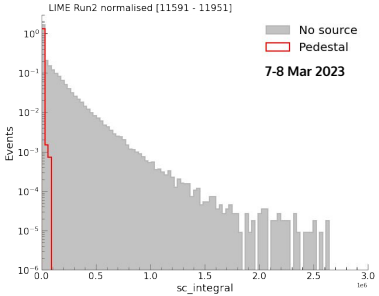


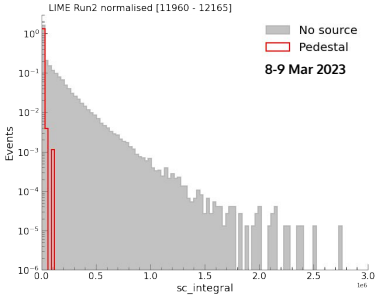




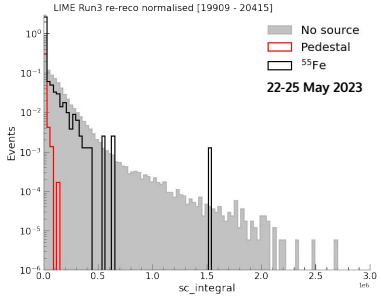
Run 2

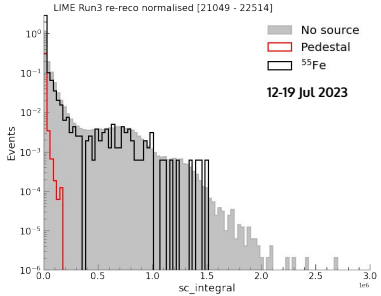


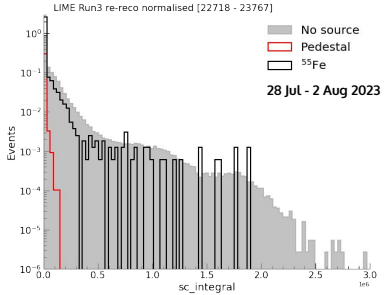




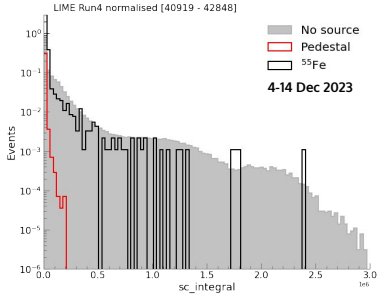
Run 3

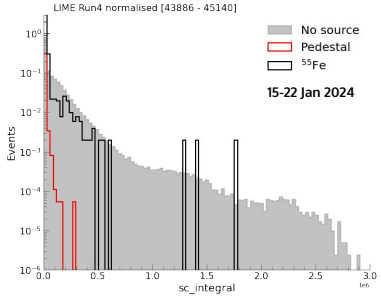






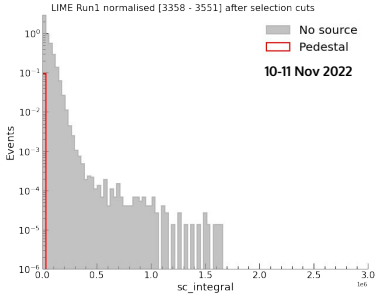
Run 4

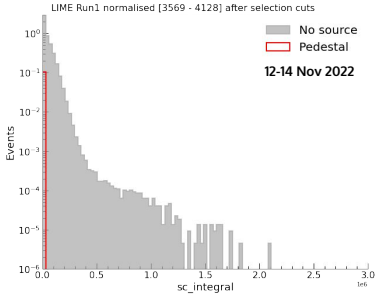


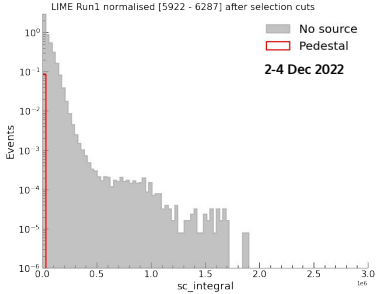


‘sc_integral’ - after cuts (normalised to the number of images)

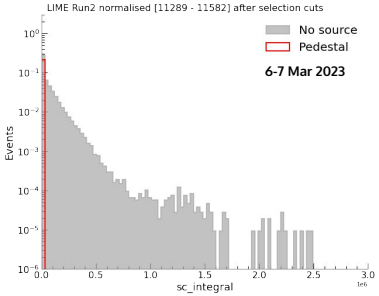
Run 1

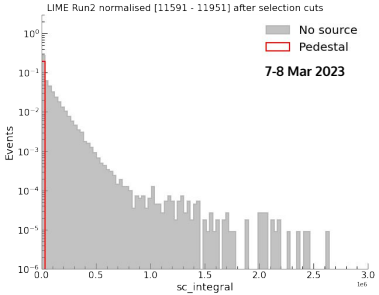


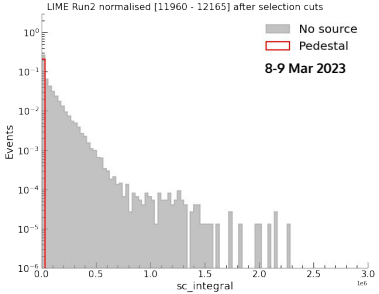




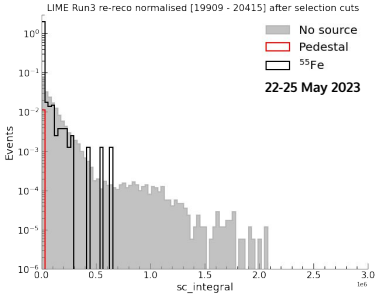
Run 2

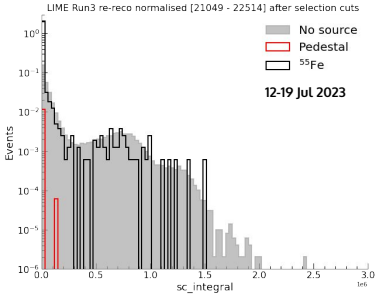


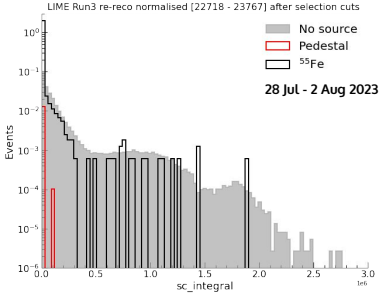




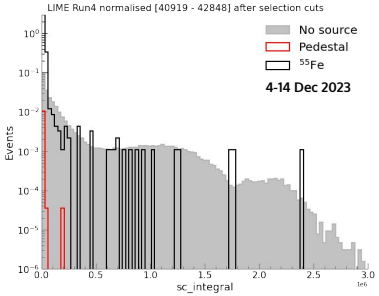
Run 3

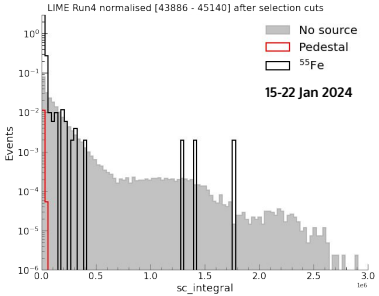






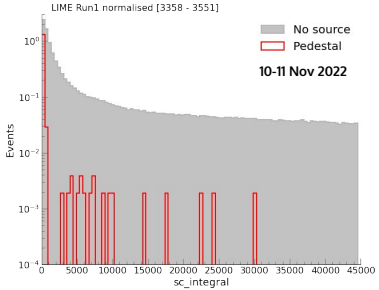
Run 4

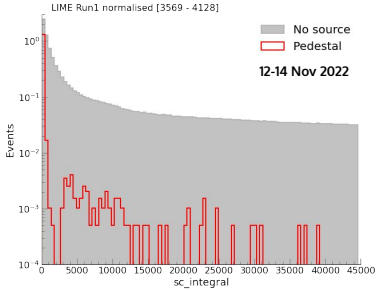


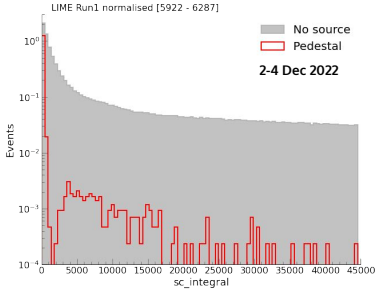


‘sc_integral’(lower energy region) - before cuts (normalised to the number of images)

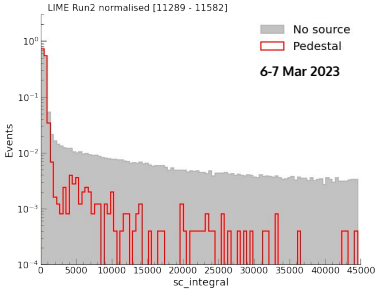
Run 1

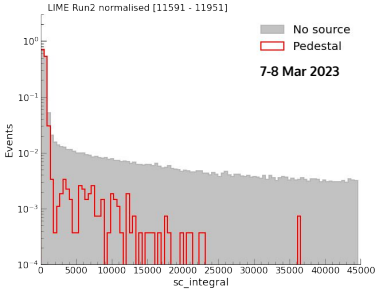


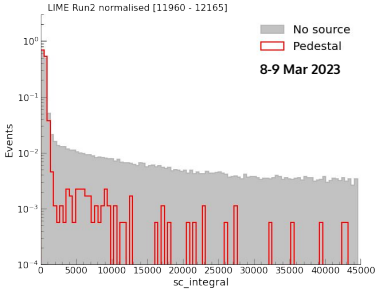




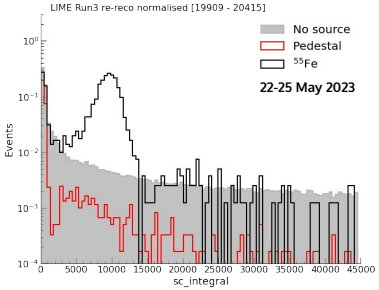
Run 2

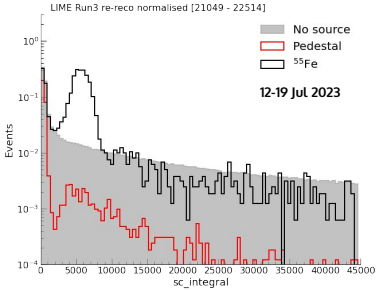


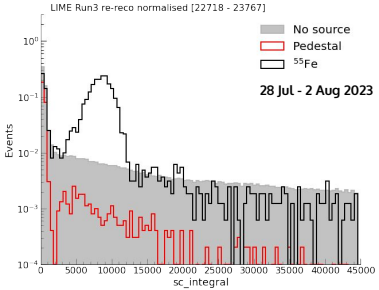




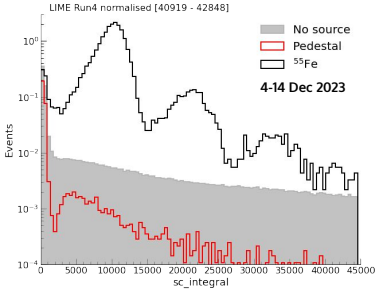
Run 3

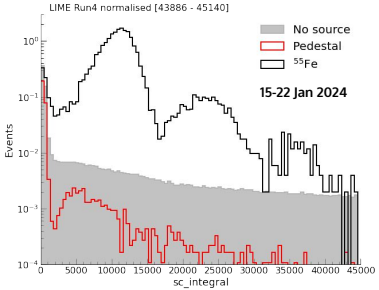






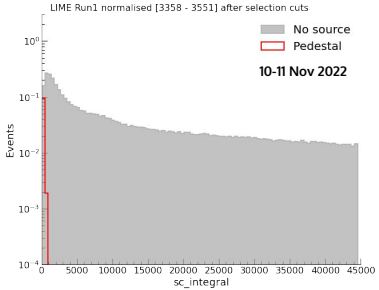
Run 4

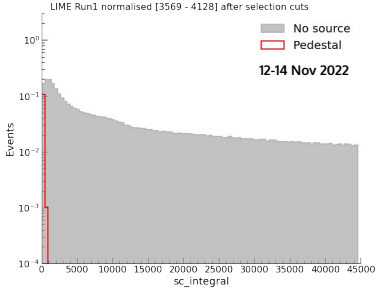


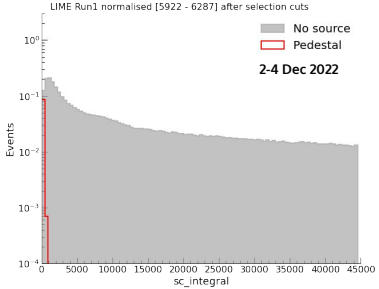


‘sc_integral’(lower energy region) - after cuts (normalised to the number of images)

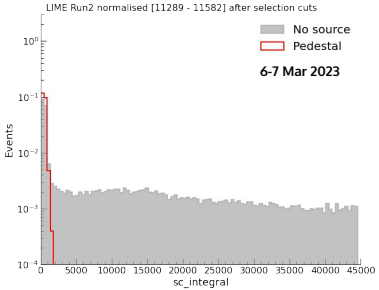
Run 1

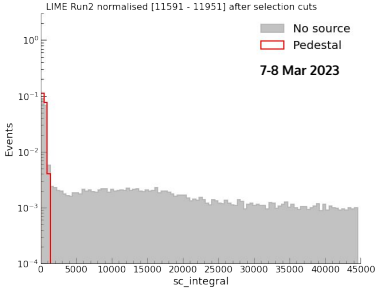


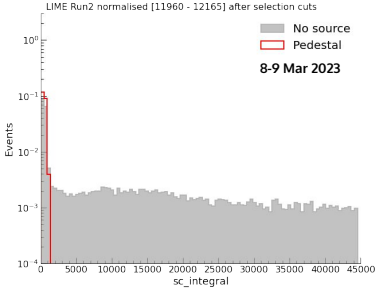




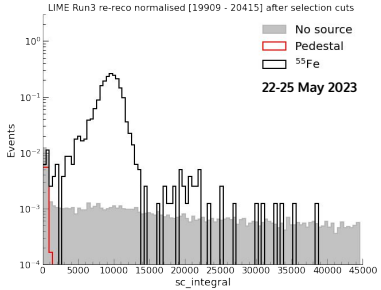
Run 2

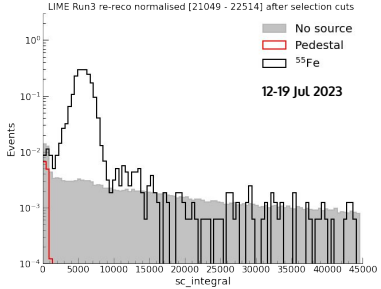


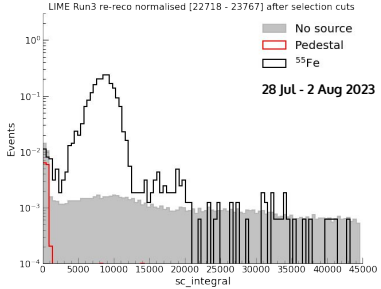




Run 3







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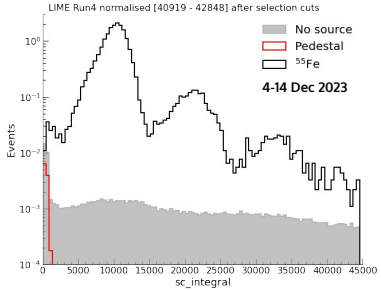

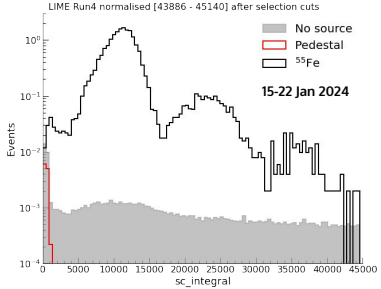

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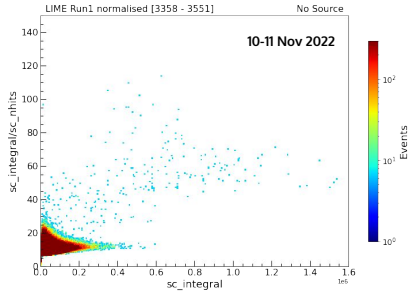

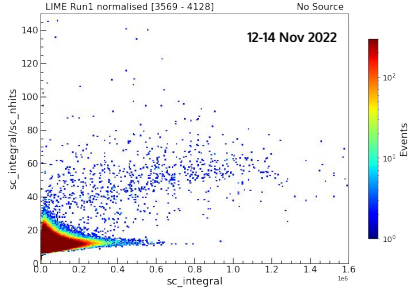

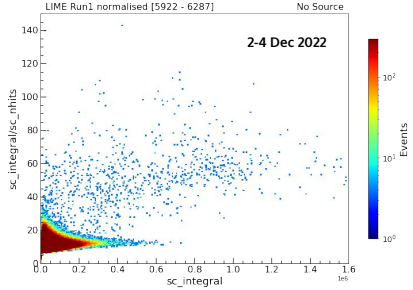

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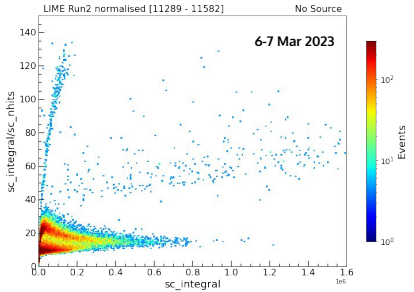

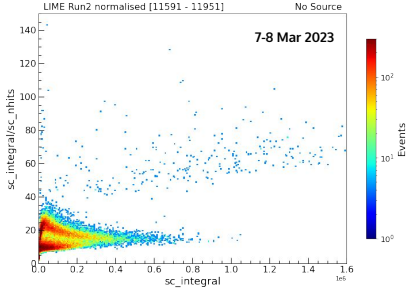

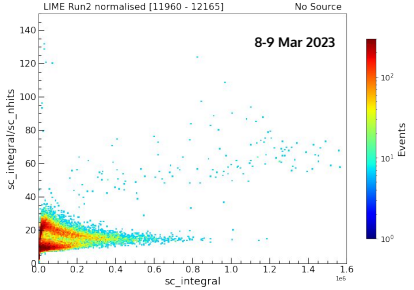

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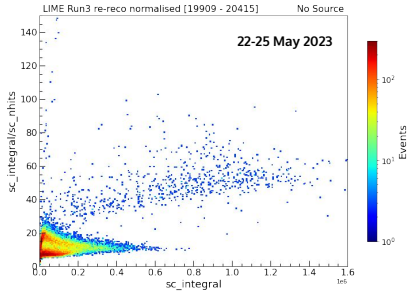

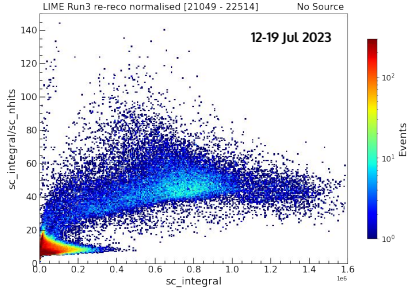

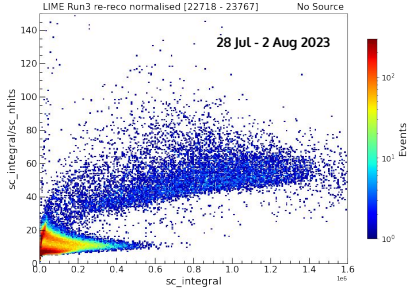

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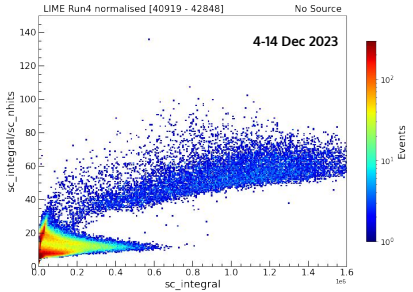

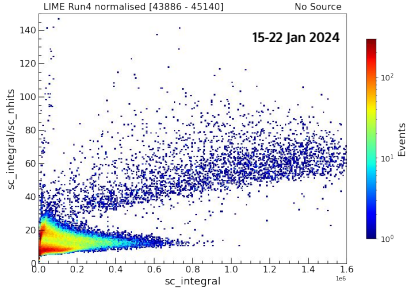

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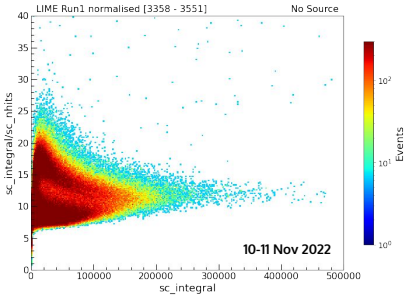

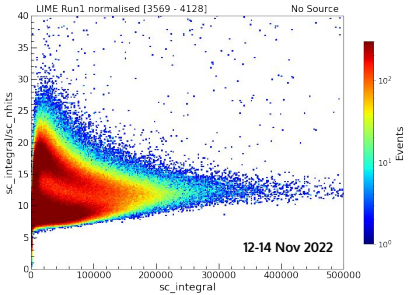

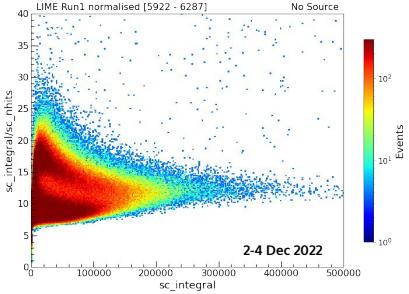

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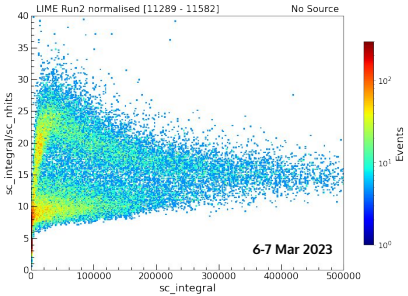

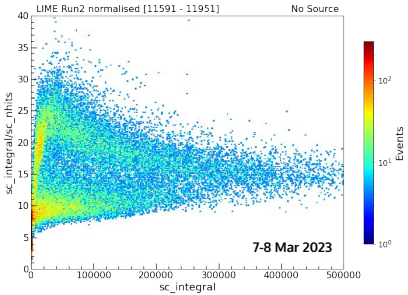

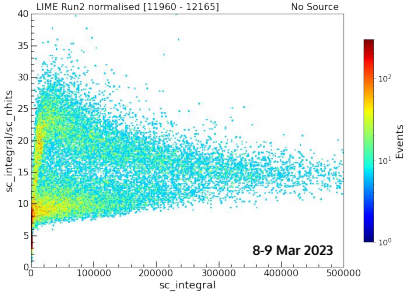

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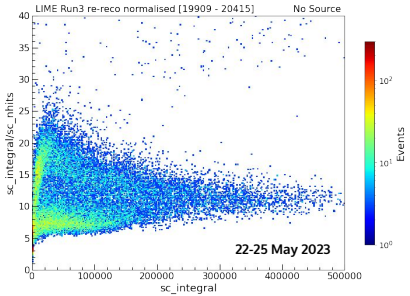

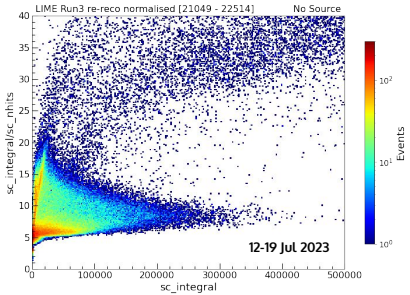

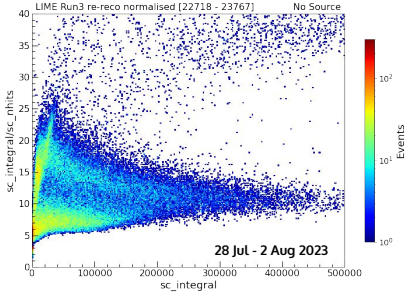

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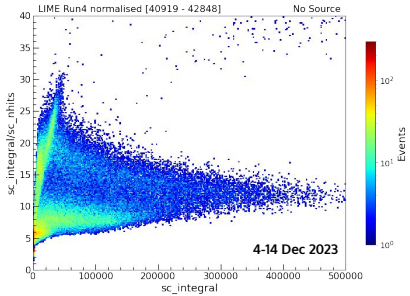

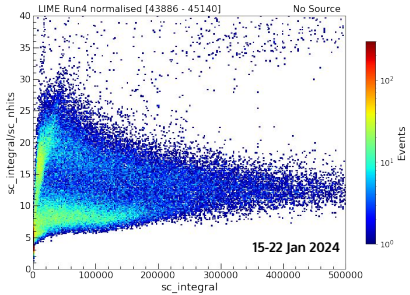

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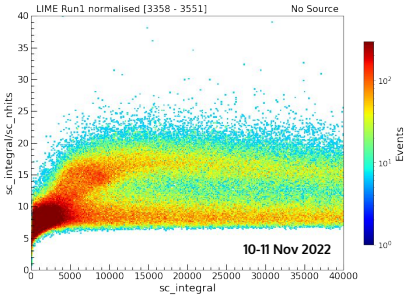

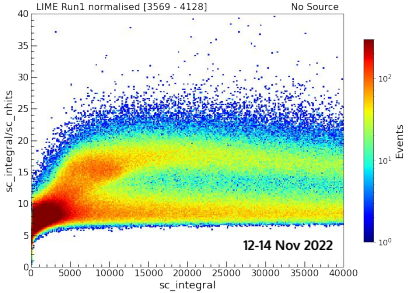

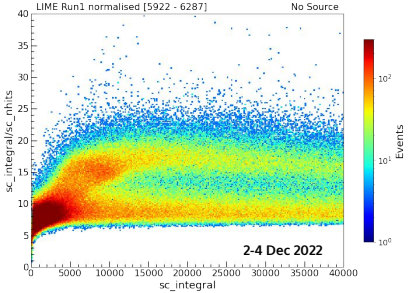

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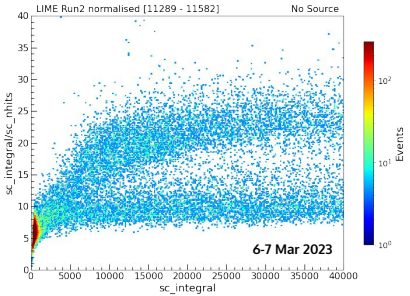

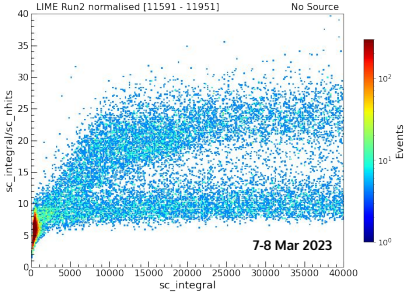

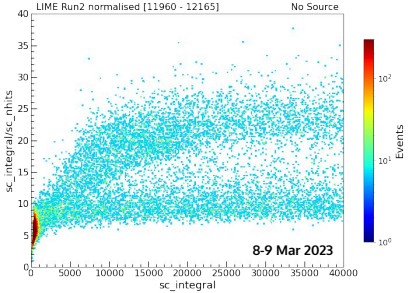

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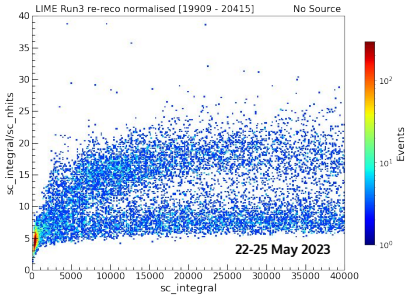

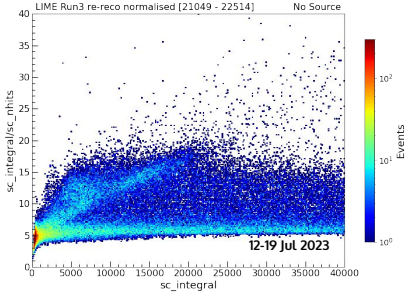

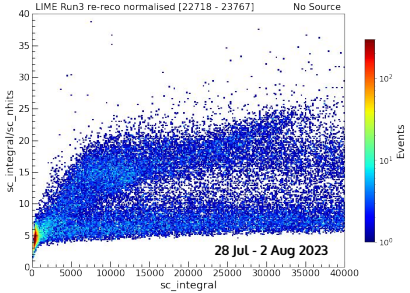

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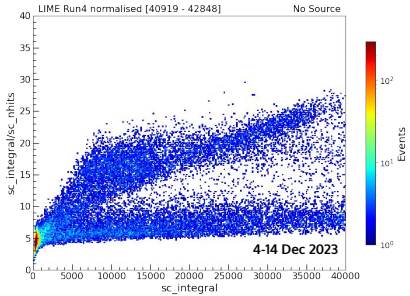

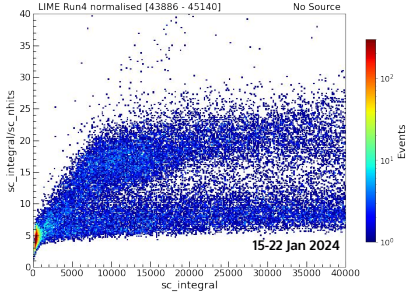

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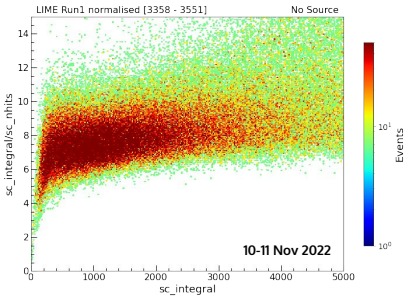

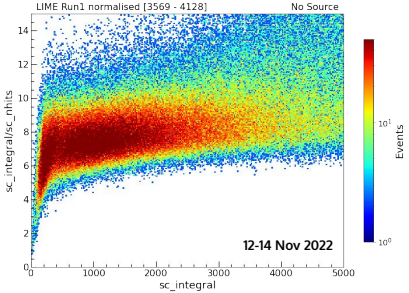

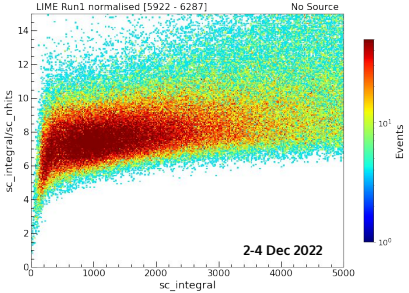

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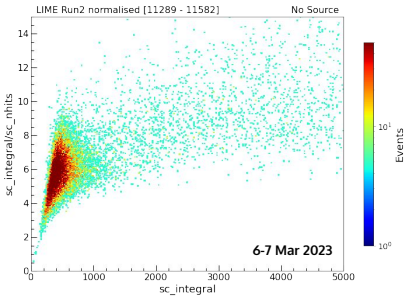

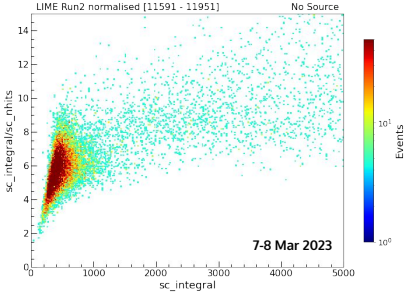

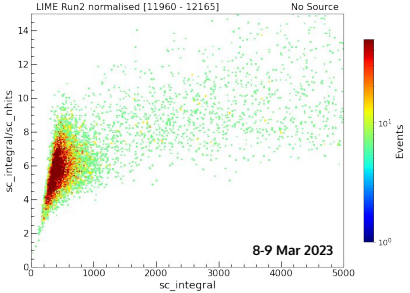

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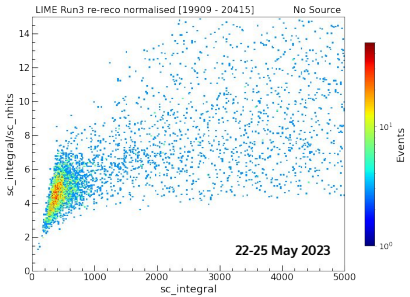

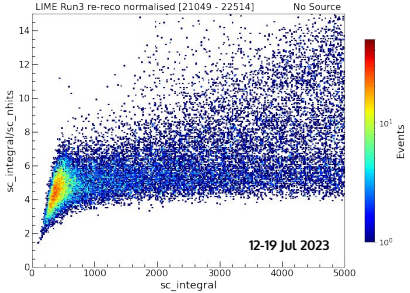

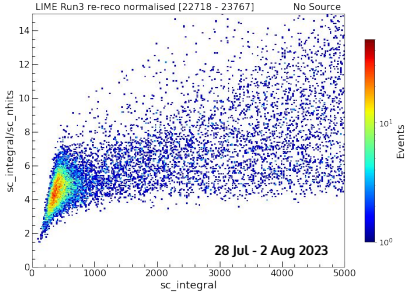

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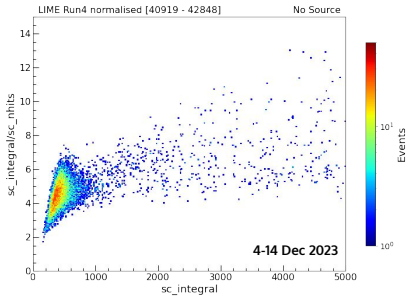

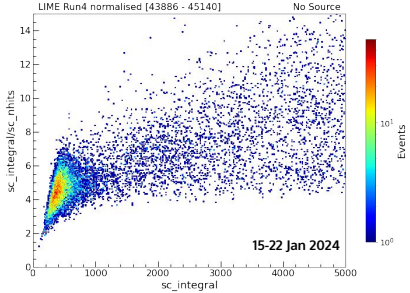

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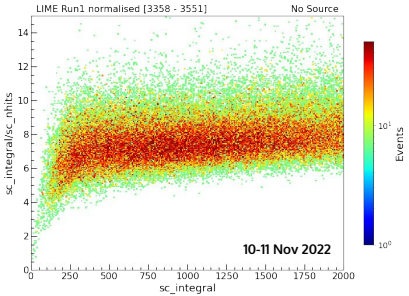

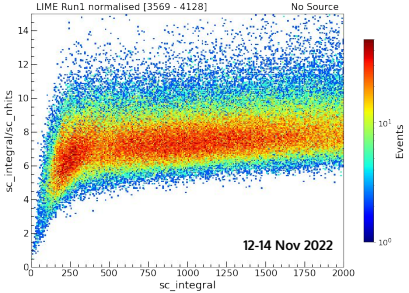

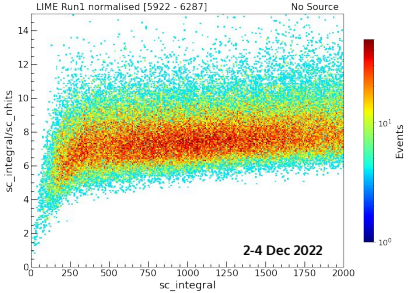

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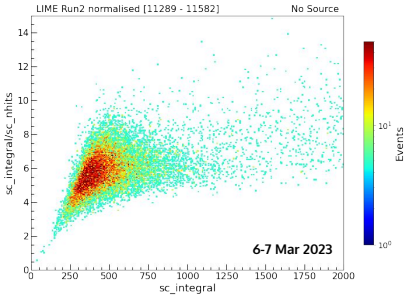

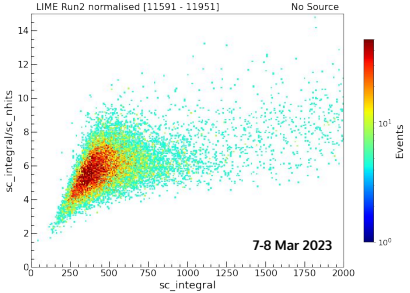

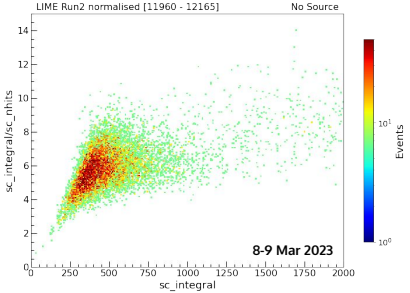

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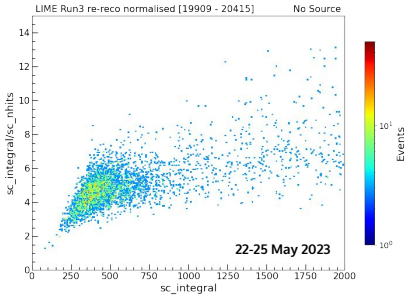

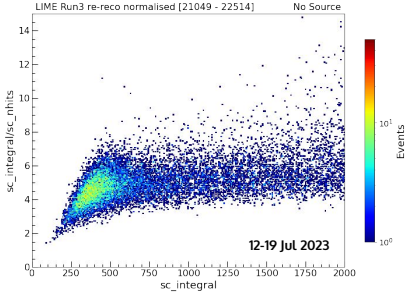

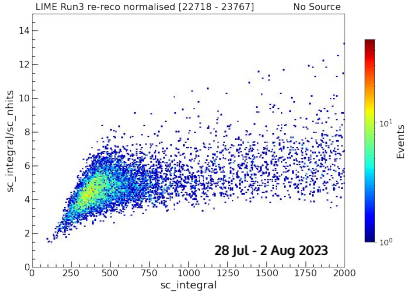

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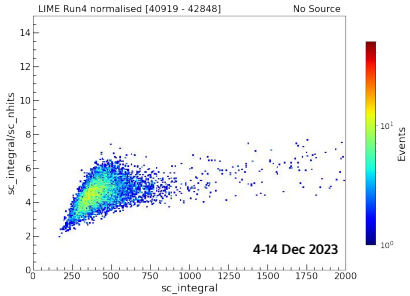

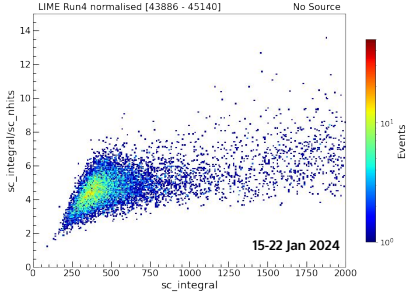

Pedestal - after cuts (normalised to the number of images)

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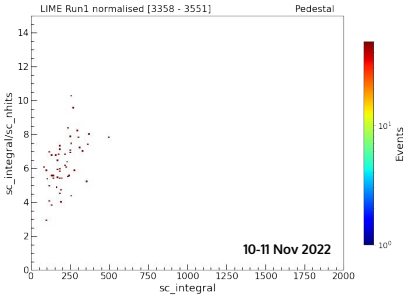

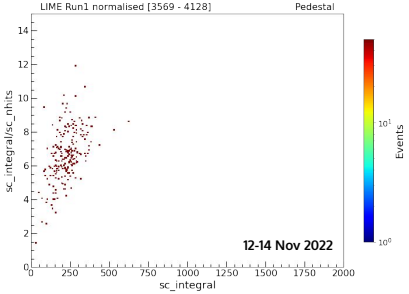

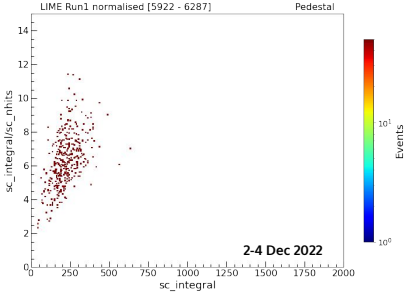

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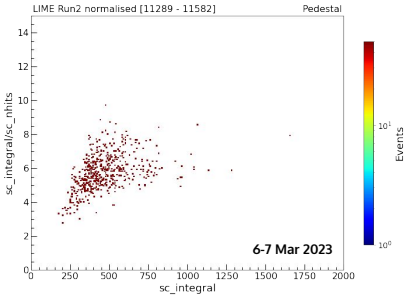

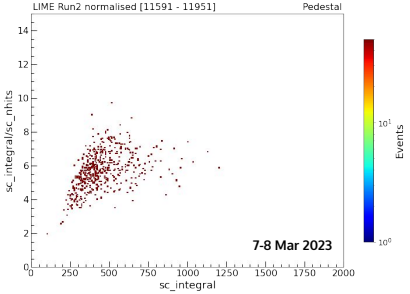

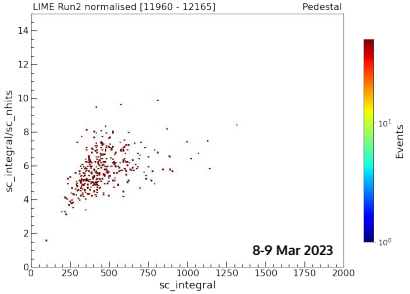

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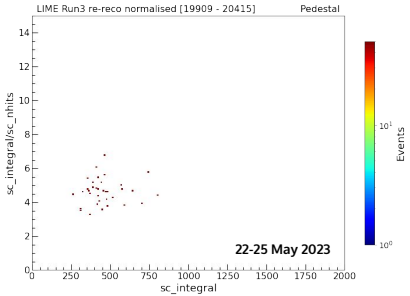

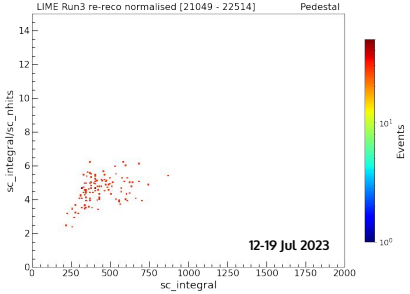

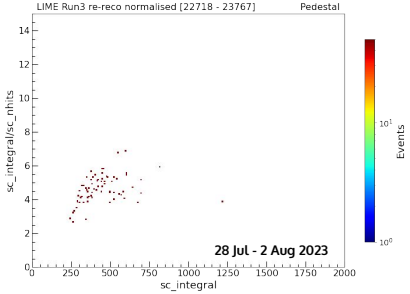

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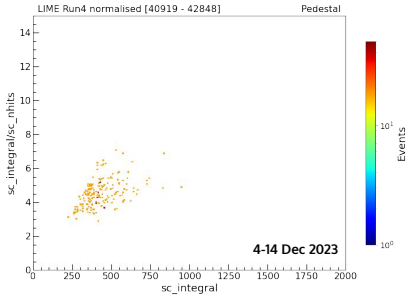
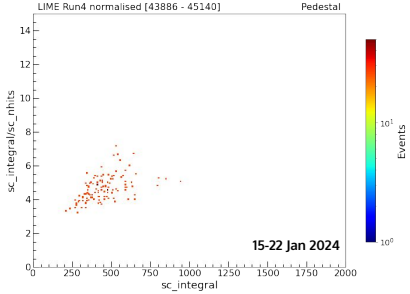
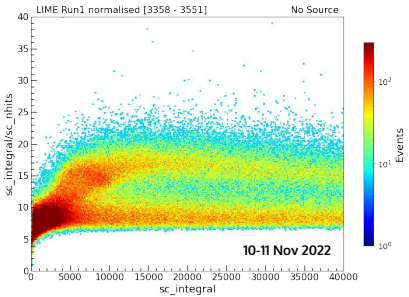
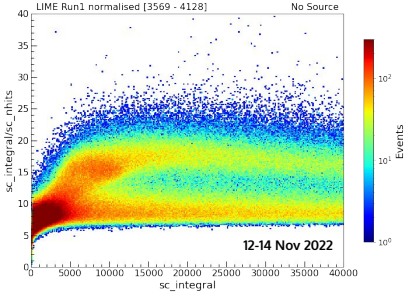


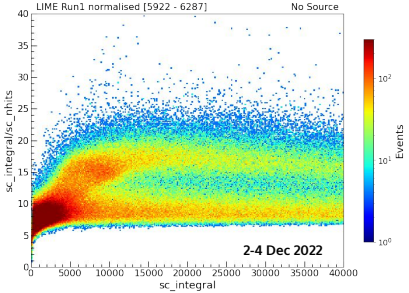


^{55}Fe contamination?

Run 1







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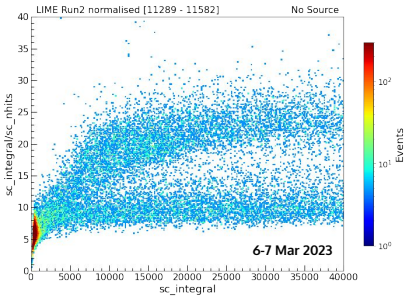

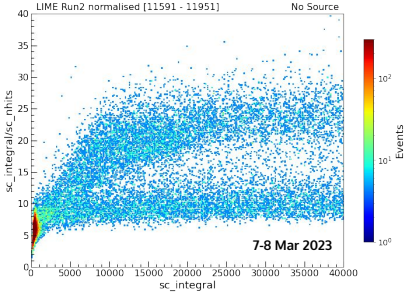

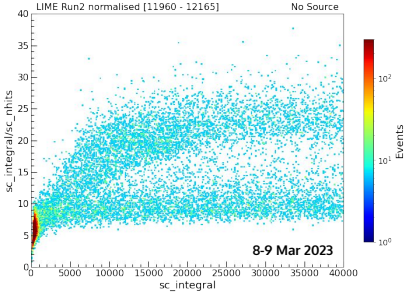

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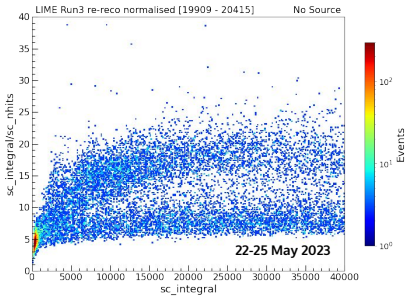

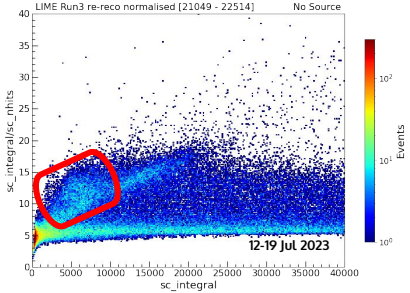

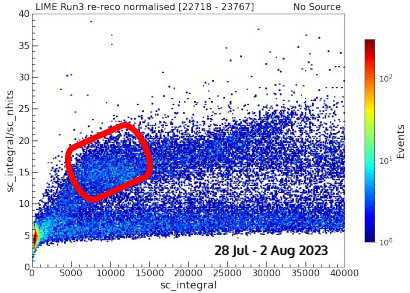

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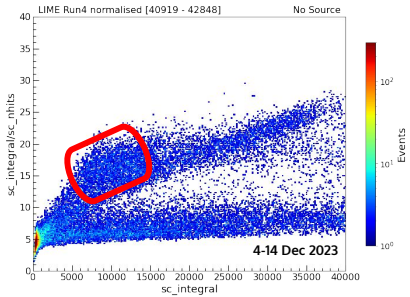
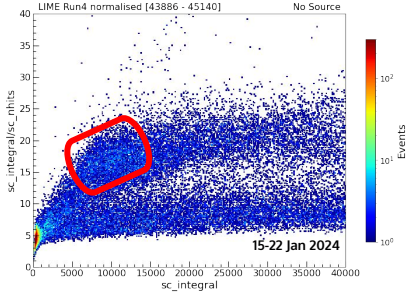
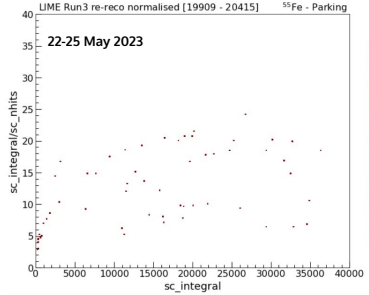
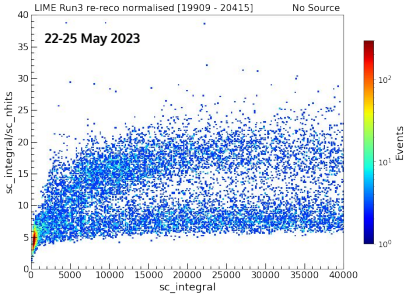


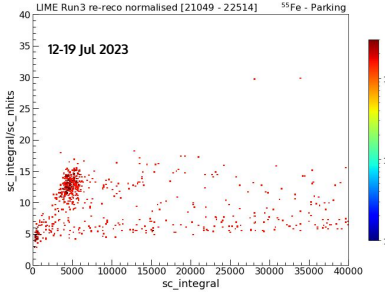


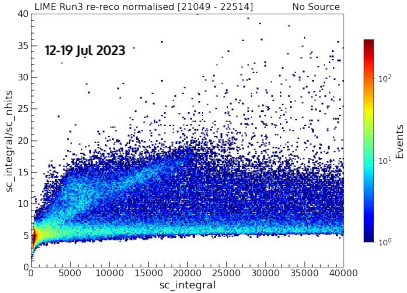
Checking ^{55}Fe contamination - source in parking position

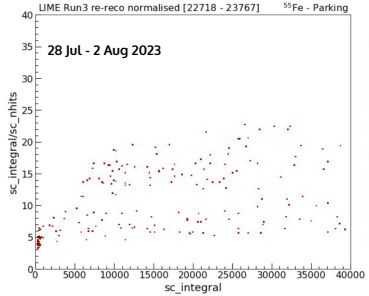
Run 3

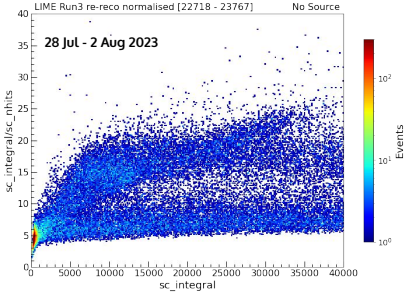












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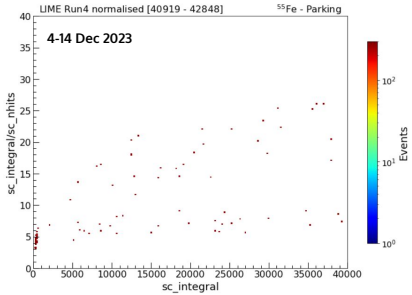

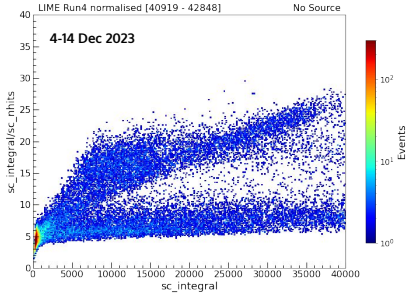

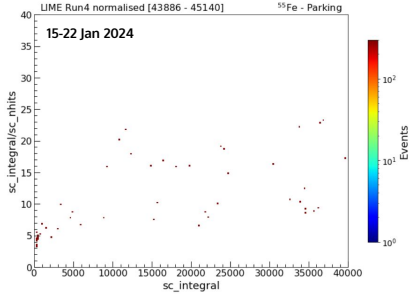

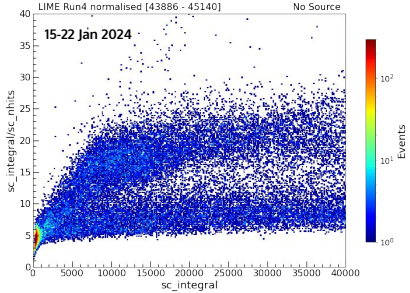

sc_integral/sc_length

Background - after cuts (normalised to the number of images)

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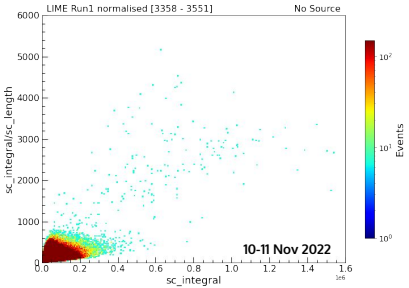
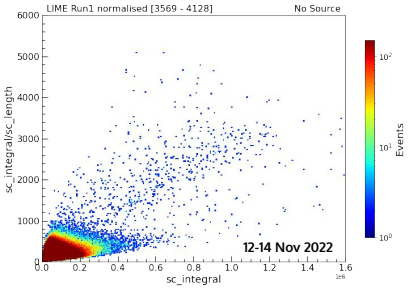
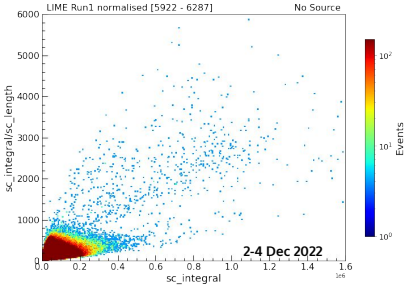
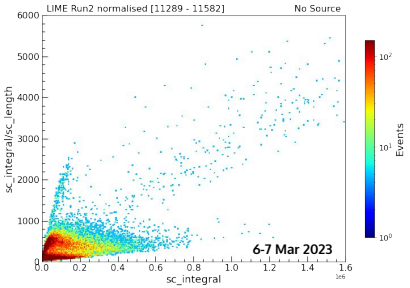
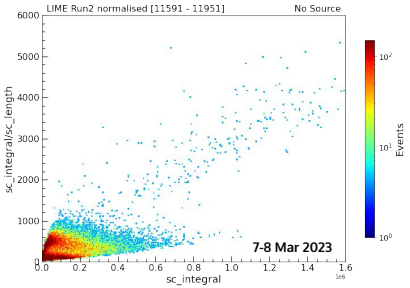


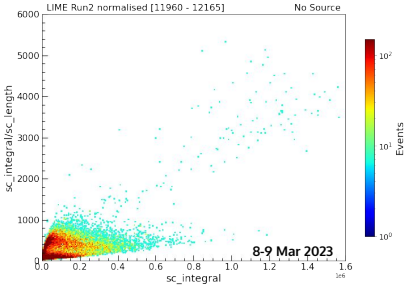




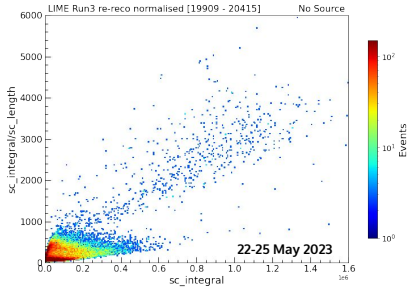
Run 2

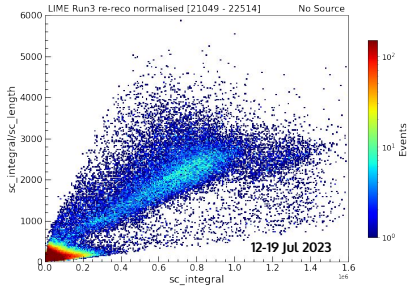


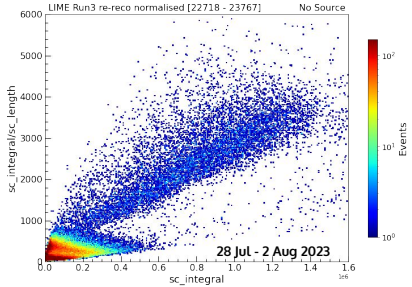




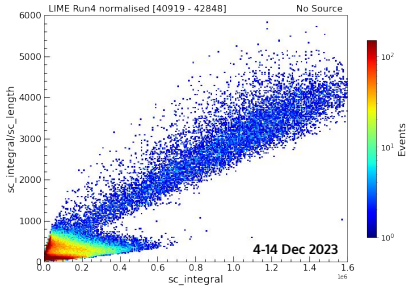
Run 3

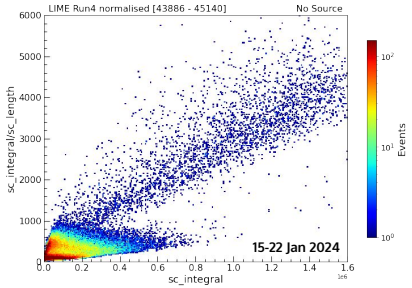






Run 4





Background - after cuts (normalised to the number of images)

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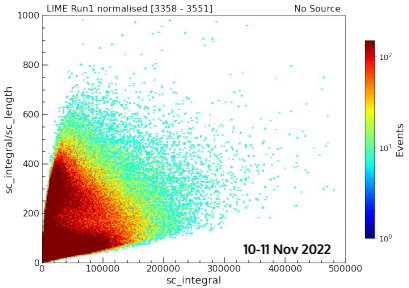
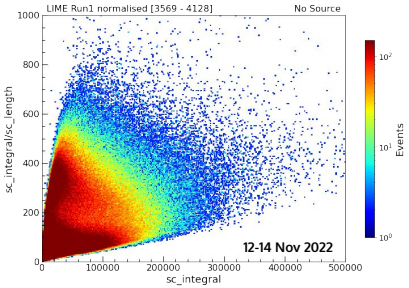
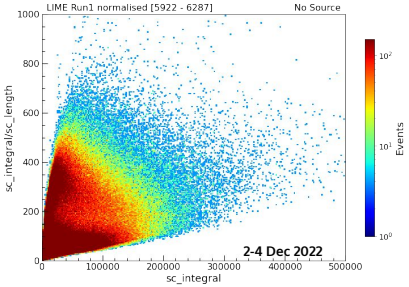
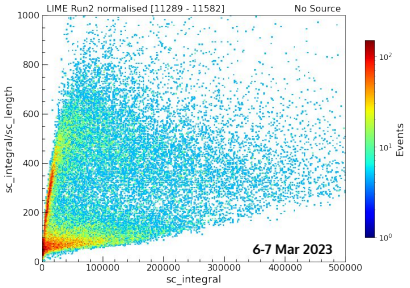
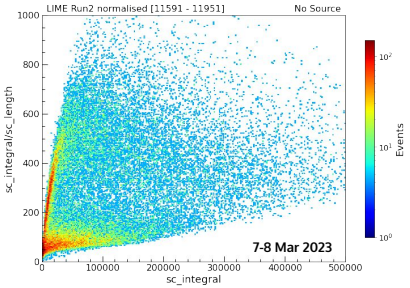


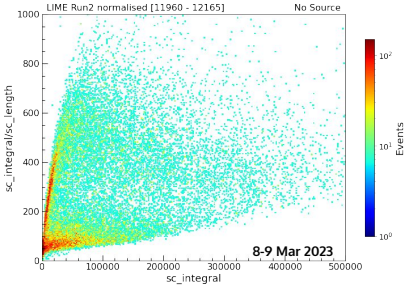




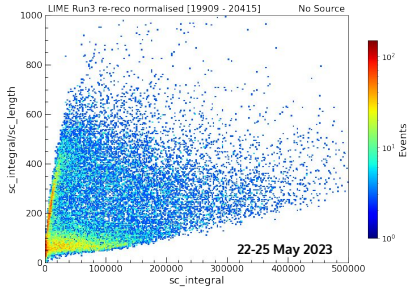
Run 2

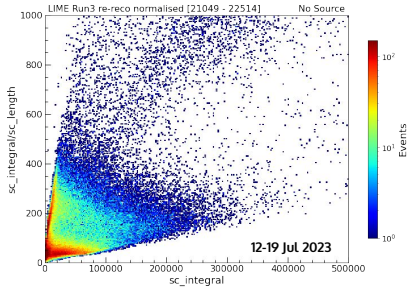


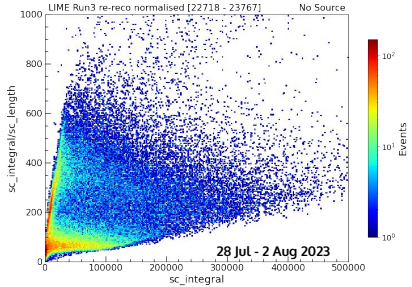




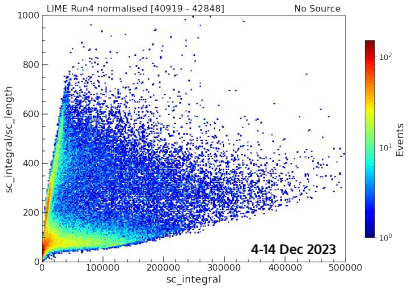
Run 3

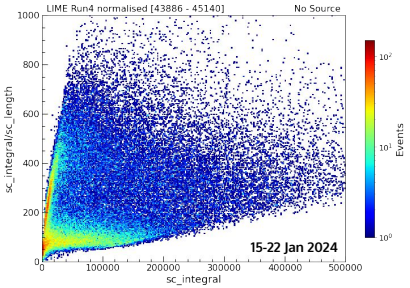






Run 4





Background - after cuts (normalised to the number of images)

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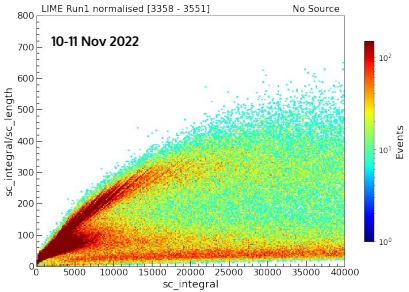
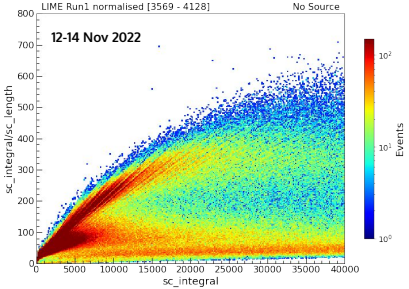
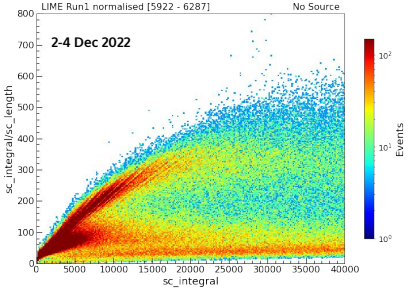
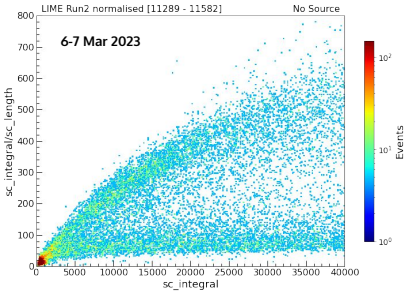
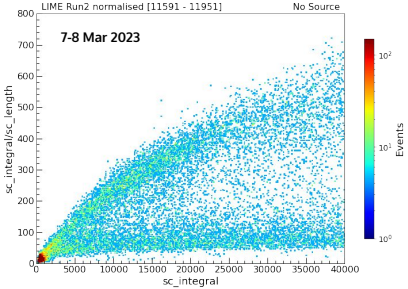


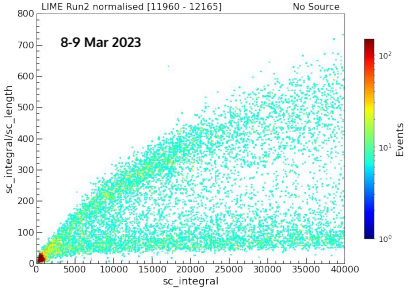




Run 2







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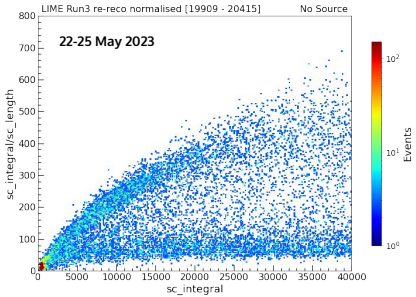
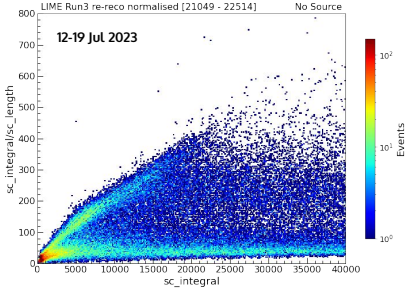
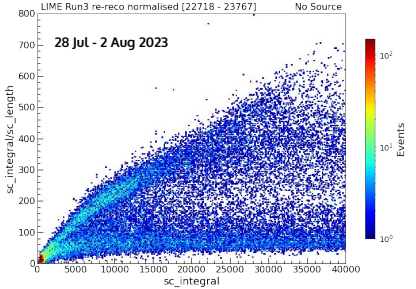
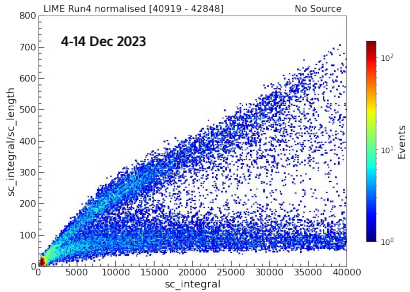
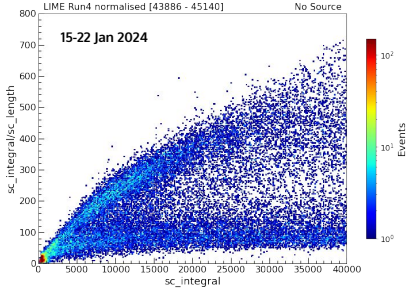






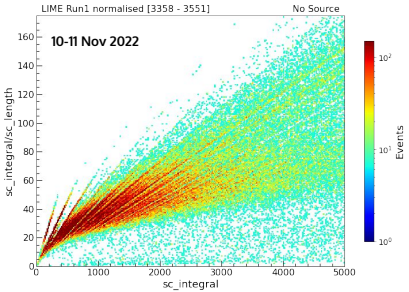
Run 4

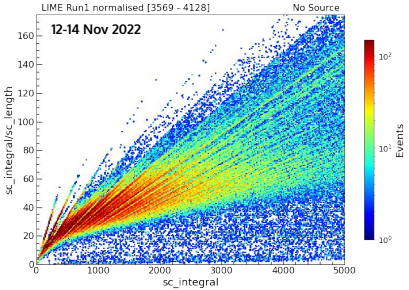


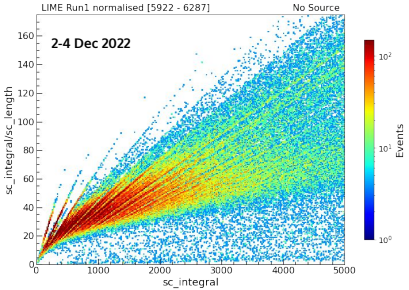


Background - after cuts (normalised to the number of images)

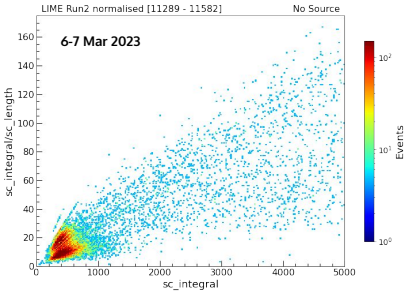
Run 1

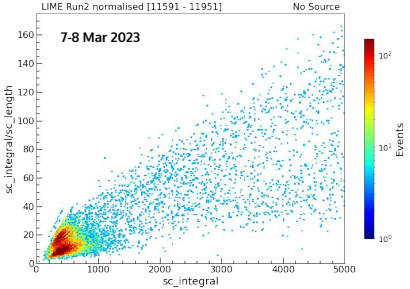


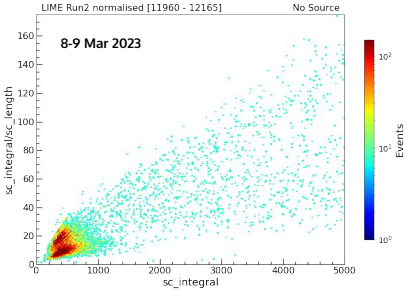




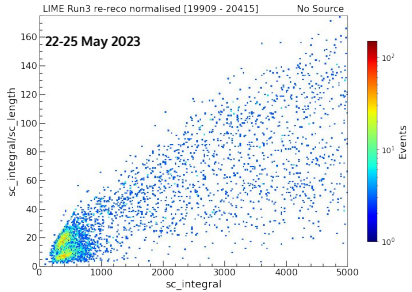
Run 2

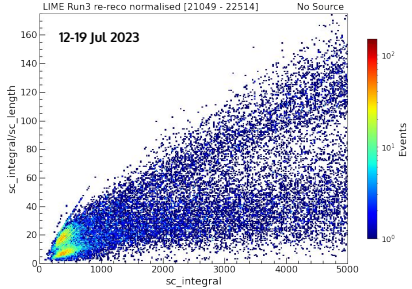


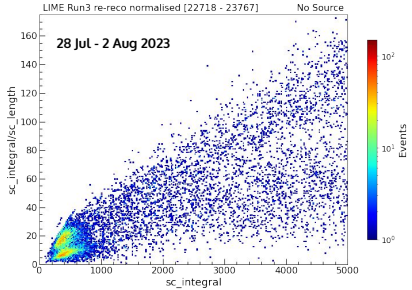




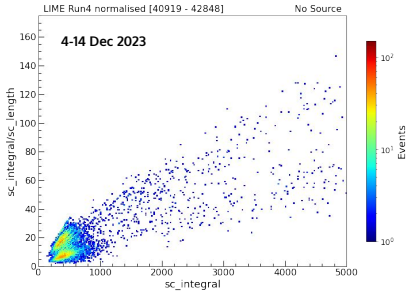
Run 3

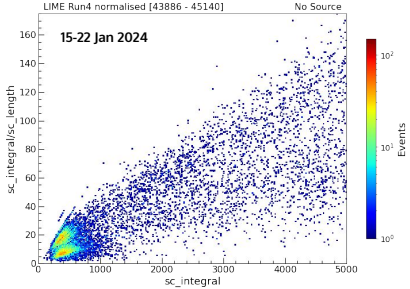






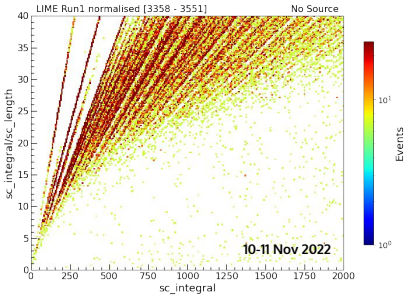
Run 4

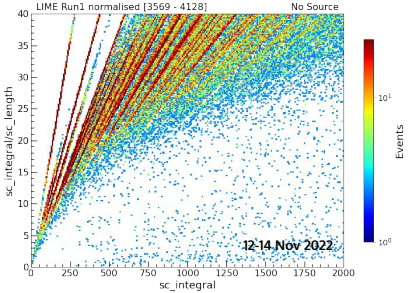


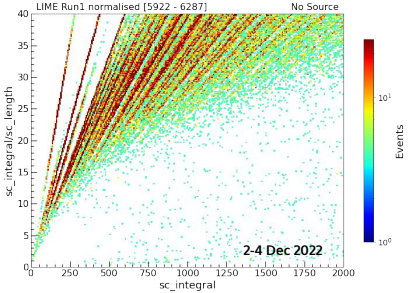


Background - after cuts (normalised to the number of images)

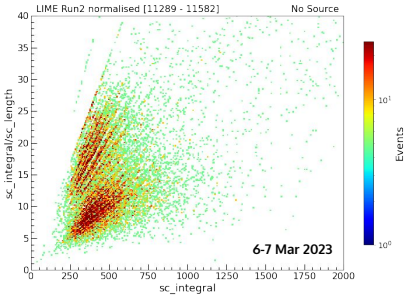
Run 1

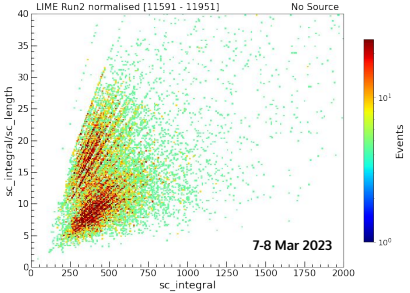


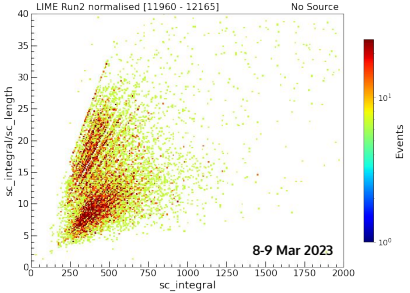




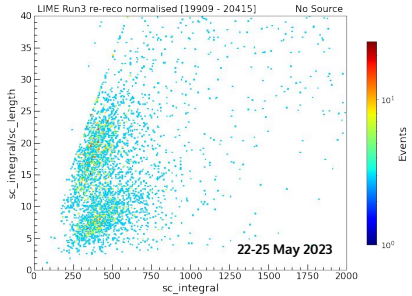
Run 2

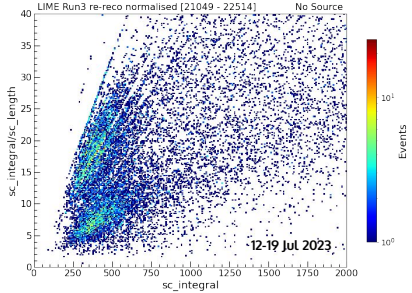


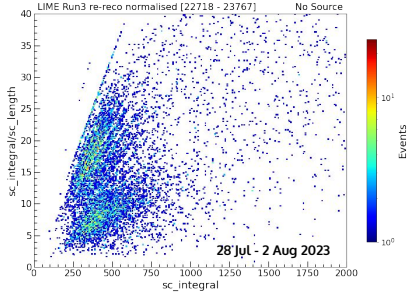




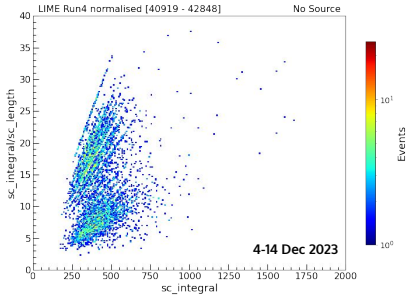
Run 3

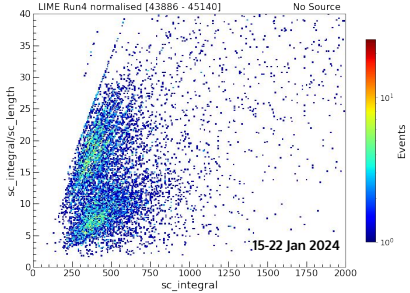






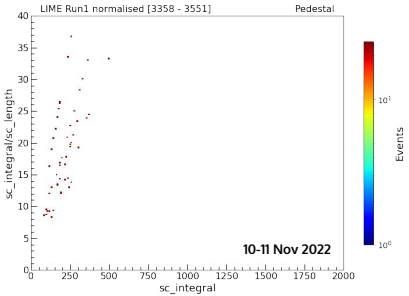
Run 4

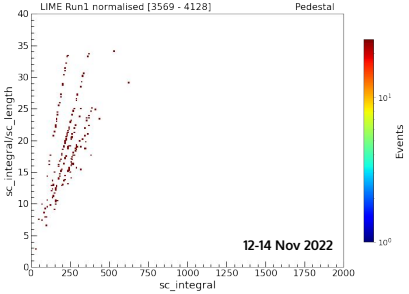


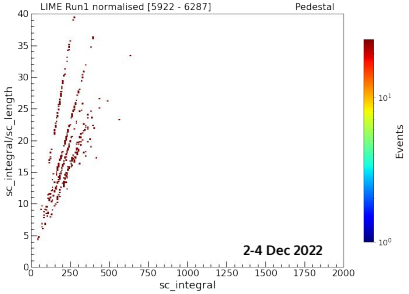


Pedestal - after cuts (normalised to the number of images)

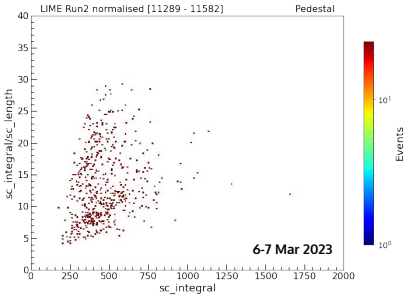
Run 1

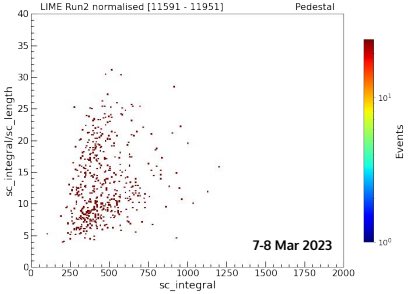


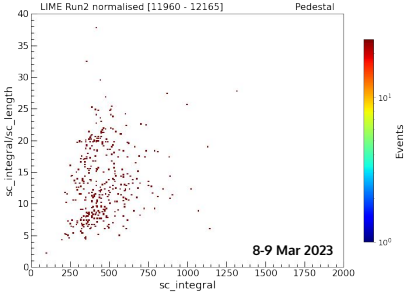




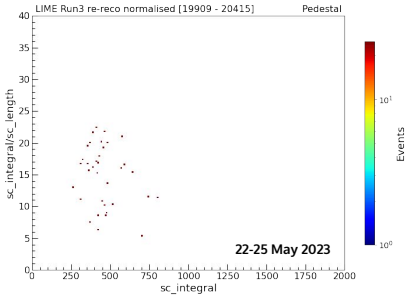
Run 2

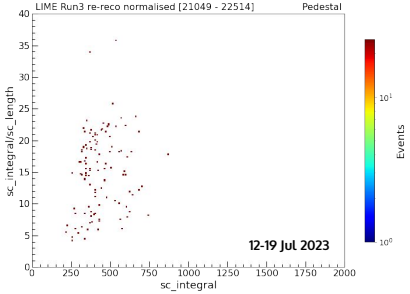


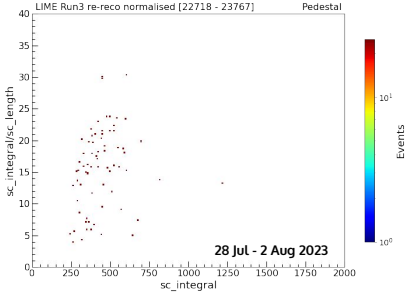




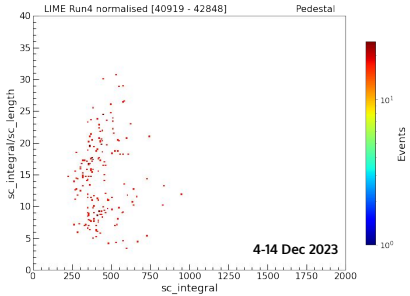
Run 3

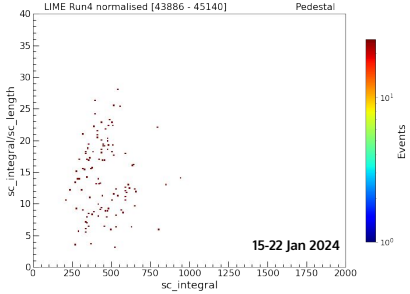




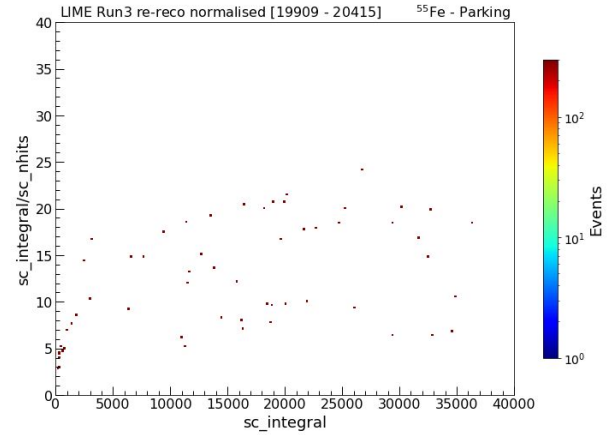


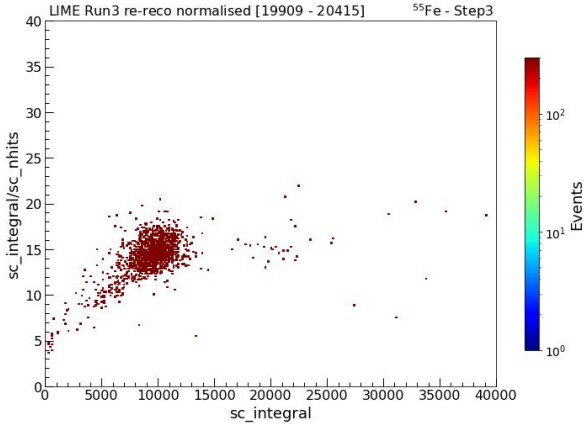
Run 4

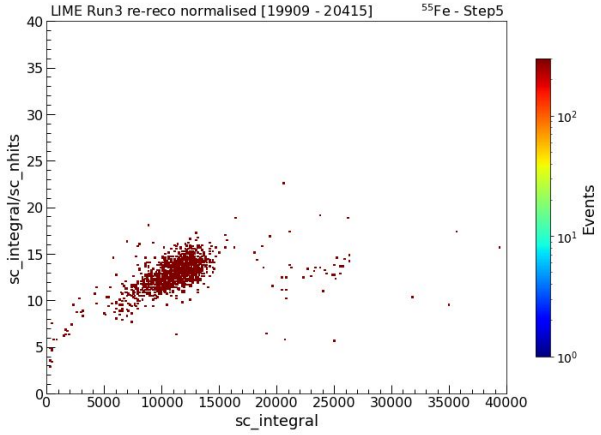


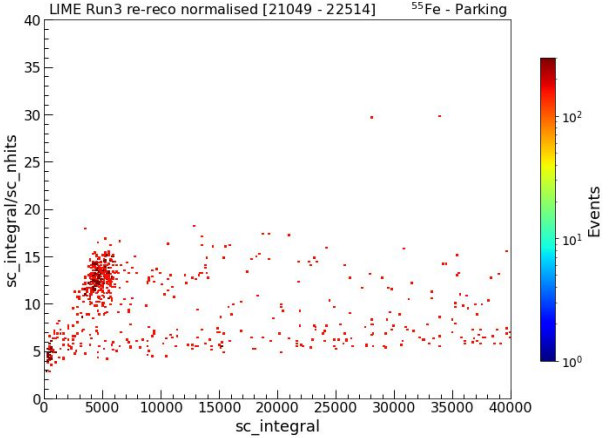


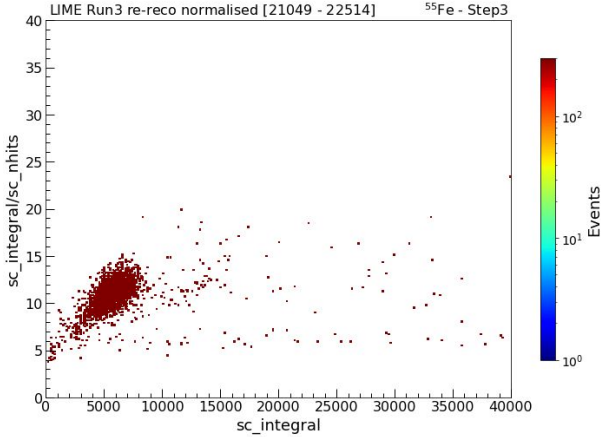
Backup

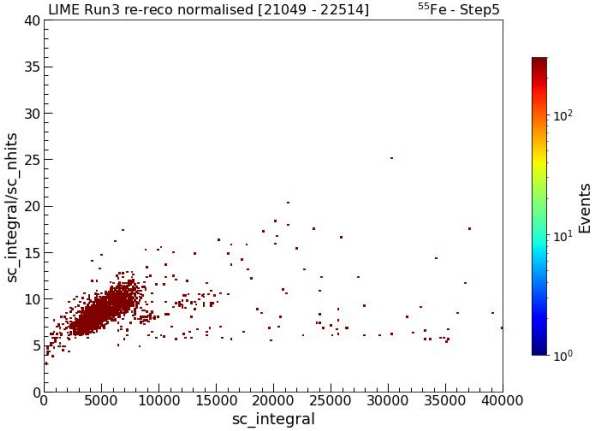

LIME Run3 re-reco normalised [19909 - 20415]
55Fe - Parking
sc_integral/sc_nhits
sc_integral
Events

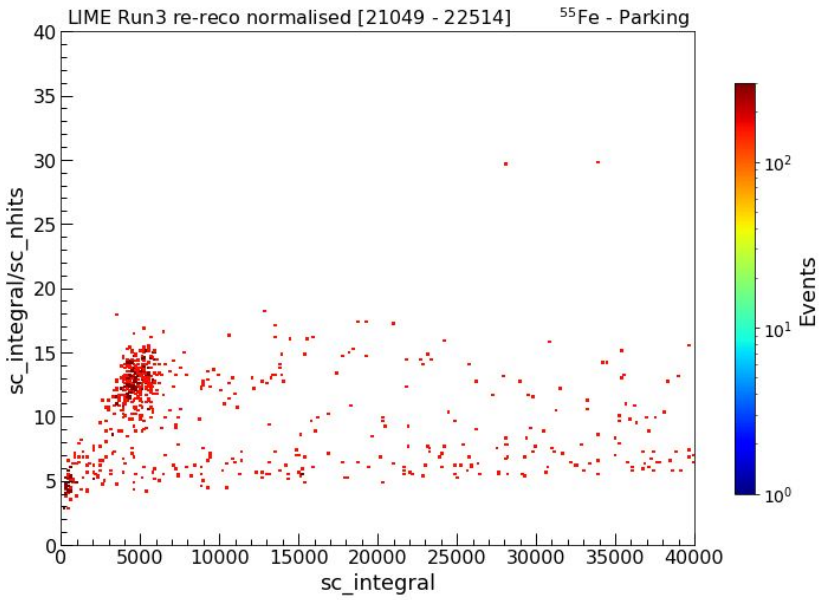

LIME Run3 re-reco normalised [19909 - 20415]
55Fe - Step3
sc_integral/sc_nhits
sc_integral
Events

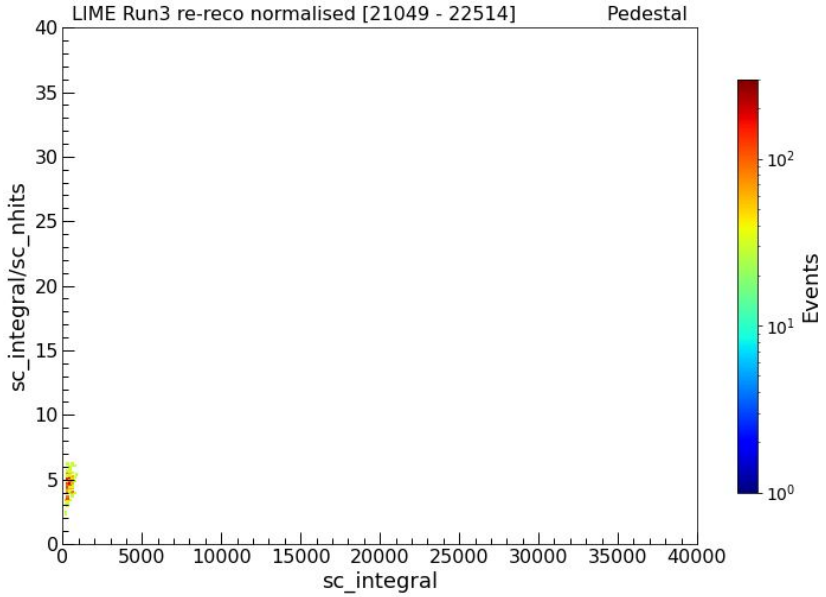

LIME Run3 re-reco normalised [19909 - 20415]
55Fe - Step5
sc_integral/sc_nhits
sc_integral
Events


LIME Run3 re-reco normalised [21049 - 22514]
55Fe - Parking
sc_integral/sc_nhits
sc_integral
Events


LIME Run3 re-reco normalised [21049 - 22514]
55Fe - Step3
sc_integral/sc_nhits
sc_integral
Events


LIME Run3 re-reco normalised [21049 - 22514]
55Fe - Step5
sc_integral/sc_nhits
sc_integral
Events


LIME Run3 re-reco normalised [21049 - 22514]
55Fe - Parking
sc_integral/sc_nhits
sc_integral
Events


LIME Run3 re-reco normalised [21049 - 22514]
Pedestal
sc_integral/sc_nhits
sc_integral
Events