

“Monte Carlo for Science Analysis”

Example: Coarse Exploration of $A_{\text{eff}} \{X,Y\}$, PSF $\{X,Y\}$

(Do we worry about A_{eff} , PSF on fine positional scales ?)

Procedure:

Monoenergetic runs for “GLAST18_3” designs, at energies: {0.10, 1.0} GeV.

Do the same (Jose’s/Steve’s) set of background and PSF quality filters as at proposal time.

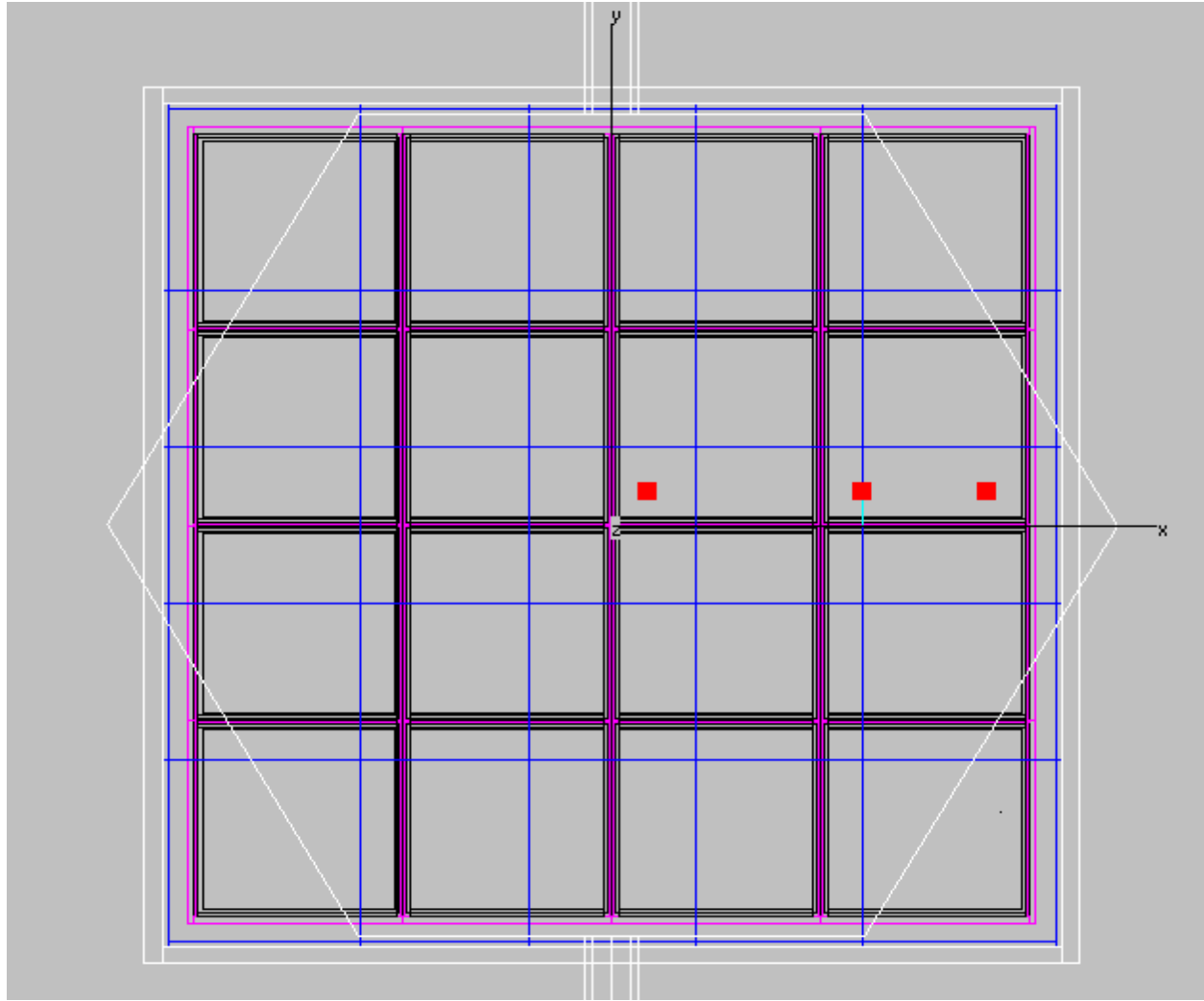
**Analyze in q ranges: $\{0-22.5^\circ, 22.5-32.5^\circ, 32.5-42.5^\circ, 42.5-53.13^\circ\}$,
($\cos(q) = 0.6$, so $q = 53.13^\circ$).**

Analyze the thin and thick radiator regions separately.

Make fits to the PSF distribution using a two-Gaussian model.

Examine $A_{\text{eff}} \{X,Y\}$, PSF $\{X,Y\}$.

[Entice others to worry about this further.]



***** 0 <= fst_s_lyr <= 11 (3.0% radiators) *****

E = 0.100 GeV, Xrange = {5.0-8.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	333.790	224.492	1.511	3.878	3.960+- 0.090	19.260	1.481	8	3440
22.5->32.5	320.937	238.424	1.608	3.574	3.960+- 0.000	14.220	1.177	11	3436
32.5->42.5	420.506	264.471	1.683	4.061	3.960+- 0.090	12.600	1.258	9	4122
42.5->53.1	299.528	238.628	1.810	4.441	4.680+- 0.090	13.860	0.928	8	3231

E = 0.100 GeV, Xrange = {44.0-47.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	354.400	208.415	1.548	4.040	3.960+- 0.090	18.720	1.479	8	3469
22.5->32.5	319.240	164.363	1.710	3.997	3.960+- 0.090	16.020	0.928	8	2970
32.5->42.5	261.409	226.511	1.546	3.659	3.960+- 0.000	14.760	0.981	9	2985
42.5->53.1	237.863	155.815	1.797	4.442	4.500+- 0.090	16.560	0.747	10	2406

E = 0.100 GeV, Xrange = {67.0-70.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	231.311	150.434	1.497	3.442	3.780+- 0.090	23.760	1.392	14	2438
22.5->32.5	175.813	158.691	1.392	3.346	3.780+- 0.090	14.220	0.673	11	2061
32.5->42.5	224.507	141.298	1.707	4.000	3.960+- 0.090	12.780	0.644	7	2211
42.5->53.1	153.098	178.373	1.572	3.809	4.500+- 0.090	12.600	0.707	8	2020

***** 0 <= fst_s_lyr <= 11 (3.0% radiators) *****

E = 1.000 GeV, Xrange = {5.0-8.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	33.144	22.490	0.193	0.485	0.504+- 0.012	1.752	1.020	8	2545
22.5->32.5	34.494	22.037	0.200	0.508	0.480+- 0.012	1.416	0.797	9	2524
32.5->42.5	42.062	23.963	0.217	0.556	0.504+- 0.000	1.464	0.880	7	2947
42.5->53.1	34.335	19.750	0.233	0.623	0.600+- 0.024	2.256	1.113	10	2509

E = 1.000 GeV, Xrange = {44.0-47.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	33.867	21.789	0.203	0.503	0.504+- 0.012	1.632	0.958	8	2527
22.5->32.5	31.703	18.645	0.206	0.526	0.504+- 0.000	1.632	0.873	9	2286
32.5->42.5	28.506	20.420	0.203	0.521	0.528+- 0.012	1.464	0.702	8	2189
42.5->53.1	23.368	12.546	0.231	0.681	0.600+- 0.024	2.016	0.702	7	1650

E = 1.000 GeV, Xrange = {67.0-70.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	23.991	15.963	0.196	0.421	0.432+- 0.012	1.488	0.665	9	1815
22.5->32.5	21.472	10.830	0.200	0.503	0.456+- 0.012	1.344	0.628	8	1478
32.5->42.5	20.346	13.182	0.202	0.496	0.504+- 0.012	1.512	0.603	8	1520
42.5->53.1	15.425	14.858	0.196	0.514	0.576+- 0.012	1.824	0.727	10	1415

***** 12 <= fst_s_lyr <= 15 (18% radiators) *****

E = 0.100 GeV, Xrange = {5.0-8.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	359.577	414.054	2.071	5.427	6.480+- 0.180	29.520	1.651	21	2472
22.5->32.5	346.080	373.264	2.303	5.952	6.840+- 0.180	41.760	1.235	8	2240
32.5->42.5	402.617	318.034	2.826	7.201	7.560+- 0.180	42.120	1.205	15	2283
42.5->53.1	275.097	306.345	2.781	7.390	8.640+- 0.360	37.080	0.901	9	1843

E = 0.100 GeV, Xrange = {44.0-47.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	614.903	200.342	3.112	9.415	6.840+- 0.180	28.080	1.624	19	2582
22.5->32.5	331.729	307.845	2.457	5.824	7.200+- 0.180	48.240	1.452	11	2062
32.5->42.5	315.716	204.474	2.973	7.376	8.280+- 0.360	69.480	1.026	7	1705
42.5->53.1	187.776	204.317	2.690	6.839	8.640+- 0.360	36.000	0.696	10	1281

E = 0.100 GeV, Xrange = {67.0-70.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	441.116	105.919	3.082	14.456	6.840+- 0.360	35.640	1.526	5	1810
22.5->32.5	288.456	66.777	3.160	9.195	7.560+- 0.360	54.000	1.231	8	1227
32.5->42.5	201.088	221.430	2.384	6.272	7.560+- 0.360	68.040	0.694	7	1359
42.5->53.1	137.998	187.570	2.429	6.626	9.000+- 0.360	36.000	0.695	14	1096

***** 12 <= fst_s_lyr <= 15 (18% radiators) *****

E = 1.000 GeV, Xrange = {5.0-8.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	25.141	18.208	0.301	0.760	0.816+- 0.024	2.760	0.904	7	2026
22.5->32.5	16.470	23.865	0.267	0.643	0.840+- 0.024	2.232	0.850	8	1871
32.5->42.5	27.616	13.634	0.384	0.921	0.888+- 0.024	2.880	1.036	8	1963
42.5->53.1	19.499	18.064	0.373	0.945	1.128+- 0.024	3.888	1.000	12	1821

E = 1.000 GeV, Xrange = {44.0-47.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	20.757	21.221	0.268	0.635	0.744+- 0.012	2.520	0.801	7	1948
22.5->32.5	14.867	18.582	0.273	0.651	0.816+- 0.012	2.568	1.058	21	1625
32.5->42.5	17.546	10.098	0.363	0.942	0.912+- 0.036	3.072	0.736	6	1323
42.5->53.1	13.756	8.897	0.365	0.995	1.056+- 0.036	3.816	0.830	8	1134

E = 1.000 GeV, Xrange = {67.0-70.0}, Yrange = {5.0-8.0}

ThetaRange	Area1	Area2	Sigma1	Sigma2	Rad68%+-ItsErr	Rad95%	RedChi	Niter	Nused
0.0->22.5	13.356	15.259	0.281	0.581	0.768+- 0.024	2.904	0.770	14	1378
22.5->32.5	11.524	9.344	0.285	0.742	0.840+- 0.024	2.952	0.626	6	1006
32.5->42.5	17.903	4.791	0.378	1.197	0.840+- 0.024	2.784	0.762	4	1110
42.5->53.1	7.863	10.679	0.286	0.697	0.984+- 0.012	4.032	0.870	21	971