Suggested Richardson-Lucy Imaging Parameters for Data Challenge 1

This document contains suggested parameters for imaging various simulated sources with COSIpy's Richardson-Lucy deconvolution algorithm.

Note: These are not necessarily the only, nor the best, parameters for running the algorithm successfully. They were determined via trial-and-error in COSIpy development and are included here for reference.

Furthermore, this is not an exhaustive list of tests! Users should feel free to try imaging only the Crab, only Cygnus X-1, or combining the Crab Nebula with the 511 keV emission, for example. One can use this table as a guide for further study.

The point sources, 511 keV, and ^{26}Al sources below are understood to be simulated at 10x their true fluxes. The Ling BG is scaled to the observed background during the 2016 flight.

"All combined sources" = point sources + 511 keV + ^{26}Al simulations

	fitted_bg	map_init	iterations	afl_scl
Point sources[a]	1E-6	1.0	150	2000
Point sources + Ling BG[a]	0.9	0.01	150	2000
511 keV[b]	1E-6	0.01	150	1000
511 keV + Ling BG[b]	0.99	0.01	150	1000
^{26}Al[c]	1E-6	0.1	150*	2000
^{26}Al + Ling BG[c]	0.9	0.01	150	2000
All combined sources[a]	1E-6	1.0	150	1000
All combined sources + Ling BG[a]	0.9	0.01	150	1000
All combined sources[b]	1E-6	0.01	150	2000
All combined sources + Ling BG[b]	0.9	0.01	150	1000
All combined sources[c]	1E-6	0.1	150	1000
All combined sources + Ling BG[c]	0.9	0.01	150	1000

[a]Continuum response, ebin = 2
[b]511 keV response
[c]1809 keV response
*has been seen to fail after ~108 iterations, but the resulting image is reasonable.