

ctools - Bug #1438

root2psf_king() in cta_root2caldb.py produces bad fits

03/10/2015 02:42 PM - Kelley-Hoskins Nathan

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|------------------------|-----|------------------------|------------|
| Status: | New | Start date: | 03/10/2015 |
| Priority: | Low | Due date: | |
| Assigned To: | | % Done: | 0% |
| Category: | | Estimated time: | 0.00 hour |
| Target version: | | | |

Description

The root2psf_king function uses the 68 and 80% containment radii, and attempts to fit the king function's sigma/gamma parameters. When the fitted sigma/gamma are checked by finding the containment fraction at the initial 68 and 80% radii, the fitted sigma/gamma always produces an 80% and ~88.3% containment fraction (instead of the expected 68% and 80%).

I've transcribed the root2psf_king() algorithm to a c function for comparison (it might be my c function was transcribed from python wrong, so I'm attaching it as well, see secantfunction.c), and compared its results to a TMinuit fitting, using an integrated king function calculated from mathematica. The results are in secantbug.log (or secantbug.nocolors.log, if you don't want the color escape characters).

In the attached log files, the first column (denoted by ':') is the method used in the fit, the second column is the initial given 68% and 80% containment radii, the 3rd column is the fitted sigma/gamma. The fourth column is the containment fraction when the radii is plugged back into the integrated psf with the fitted sigma/gamma from the 3d column. The 5th column will have 'warn!' if something is wrong with the line.

Files

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|------------------------|---------|------------|-----------------------|
| secantbug.log | 193 KB | 03/10/2015 | Kelley-Hoskins Nathan |
| secantbug.nocolors.log | 167 KB | 03/10/2015 | Kelley-Hoskins Nathan |
| secantfunction.c | 2.96 KB | 03/10/2015 | Kelley-Hoskins Nathan |