



photutils

An Astropy Package for Photometry



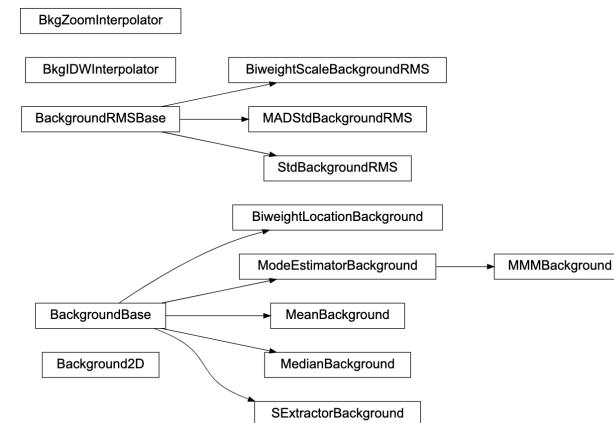
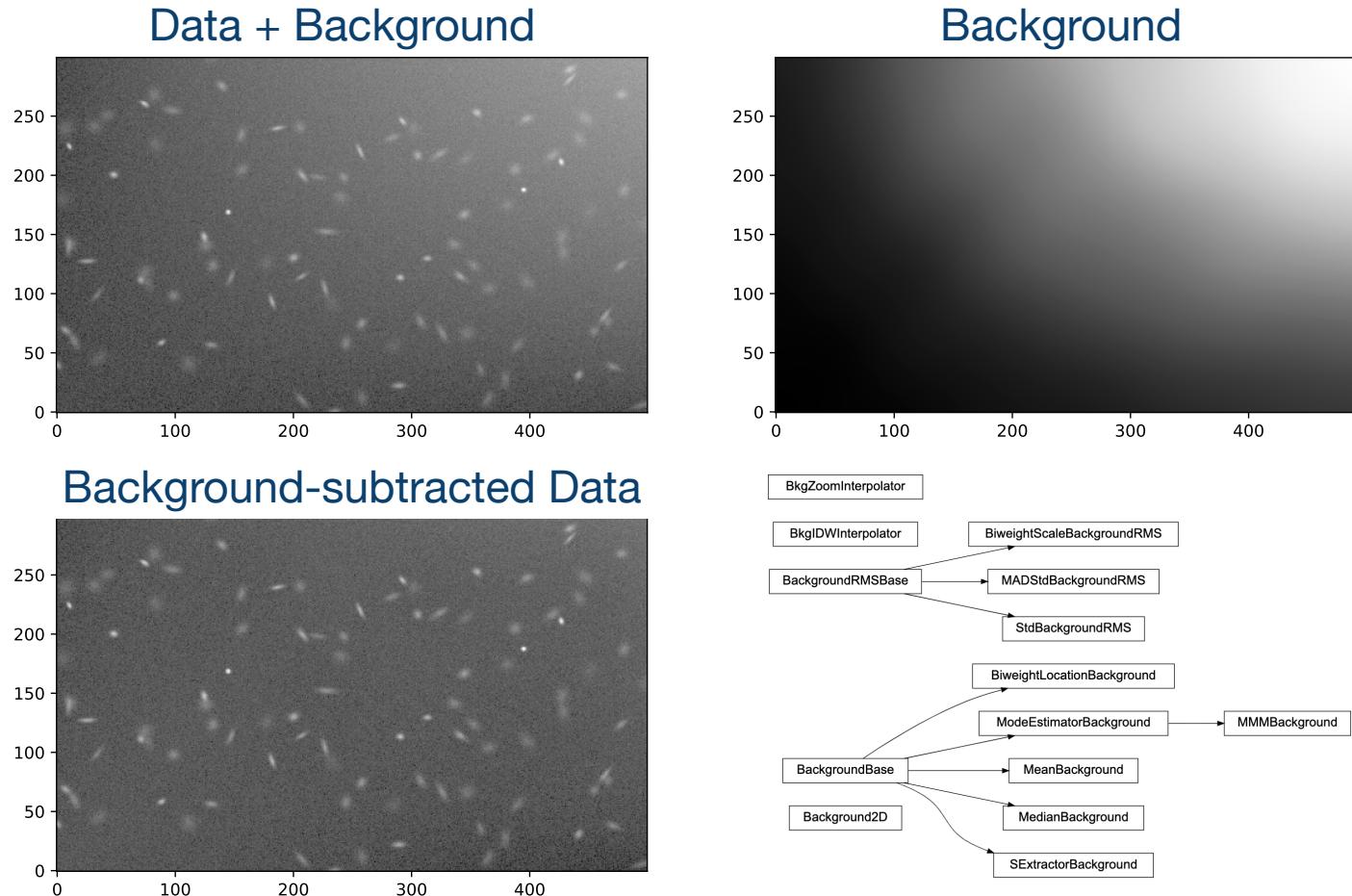
Photutils is Astropy coordinated package for source detection and photometry (and related tools).

It provides flexible/modular tools for:

- 2D Background (and RMS) Estimation
- Source Detection/Extraction
- Aperture Photometry
- Image Segmentation (incl. Isophotal and Kron photometry)
- PSF-fitting Photometry
- Building an effective PSF (ePSF)
- PSF Matching
- Elliptical Isophotal Fitting and Analysis
- Centroids

2D Background Estimation

photutils.background



Source Detection/Extraction

Star Finders (photutils.detection)

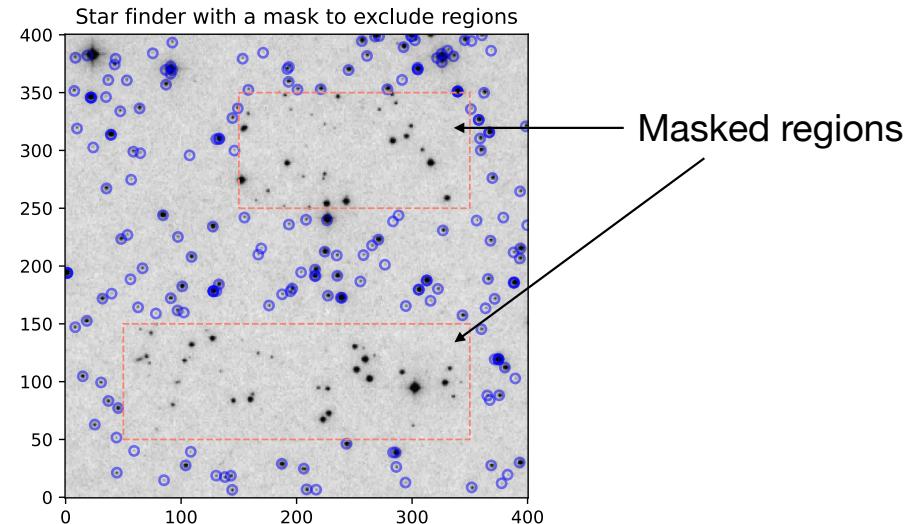
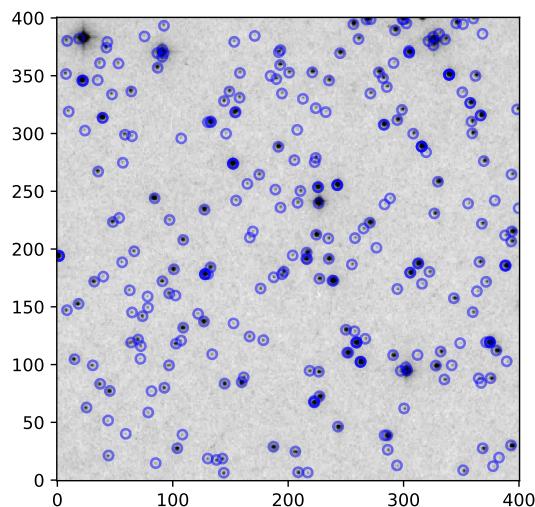


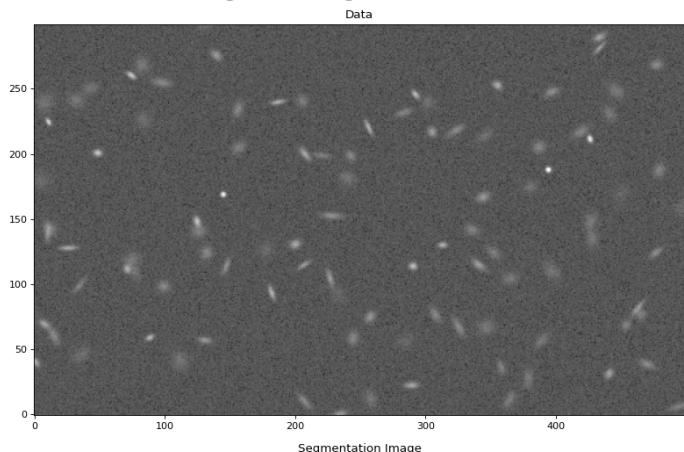
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1	144.24757	6.3797904	0.58156257	0.20351244	-0.0082188029	25	0	6903	5.6976747	-1.8892441
2	208.66907	6.8205805	0.48348966	-0.12585138	-0.030811133	25	0	7896	6.7186388	-2.0682032
3	216.92614	6.5775933	0.69359525	-0.70664632	-0.096088688	25	0	2195	1.6662764	-0.55436758
4	351.62519	8.5459013	0.48577834	-0.3415136	0.015124942	25	0	6977	5.8970385	-1.9265849
5	377.51991	12.065501	0.52038488	0.36971562	-0.06508248	25	0	1260	1.1178252	-0.12093477
6	294.27284	12.737191	0.68021892	0.10631228	-0.3445009	25	0	2059	1.4809613	-0.42635928

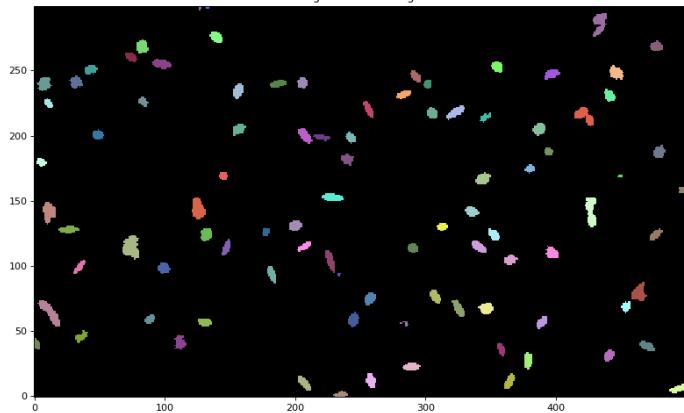
Source Detection/Extraction

photutils.segmentation

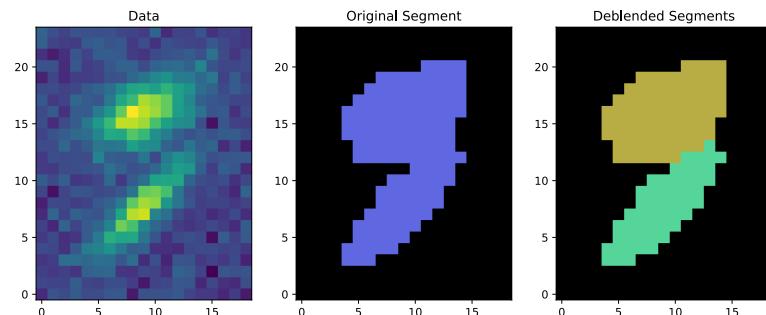
Image Segmentation



Isophotal
footprints

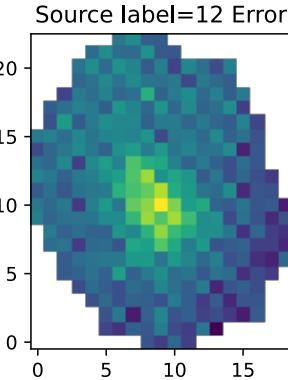
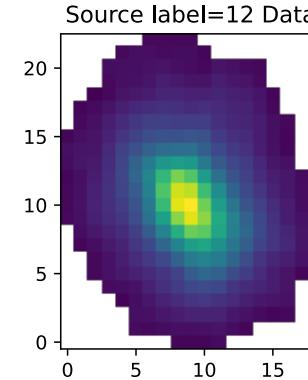
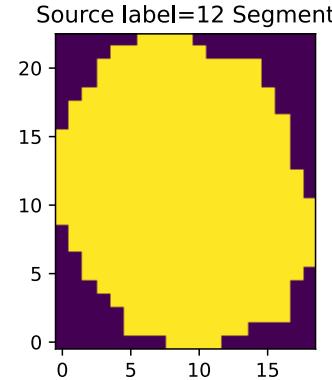
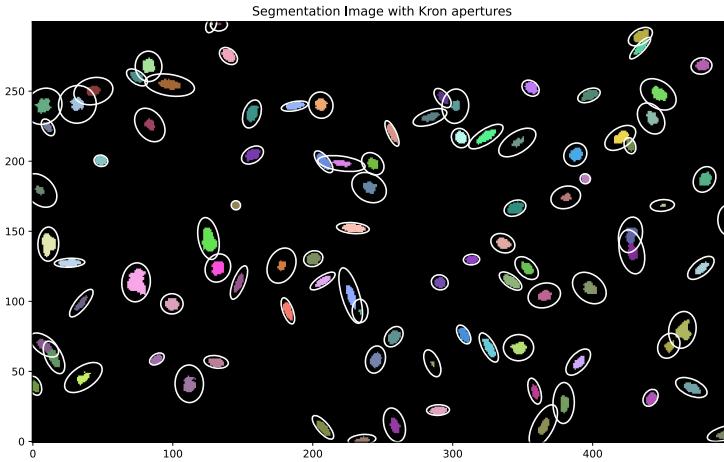
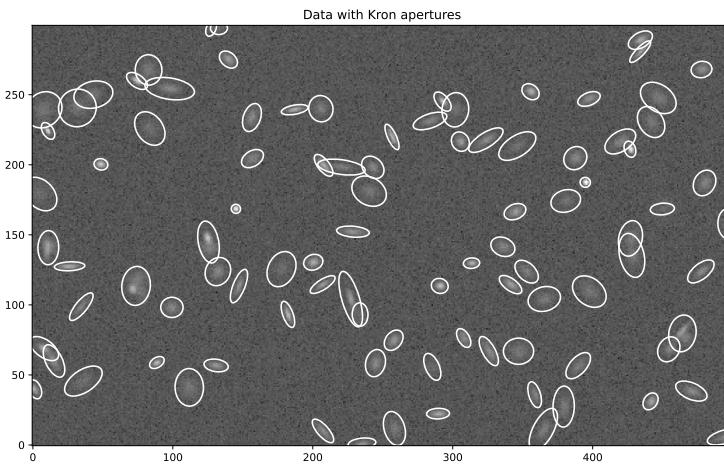


Source Deblending



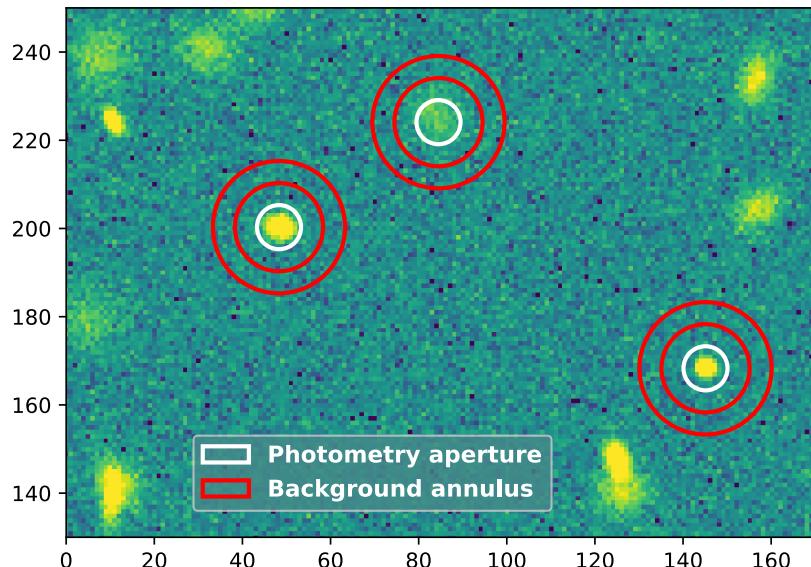
Segmentation Source Properties

photutils.segmentation



Aperture Photometry

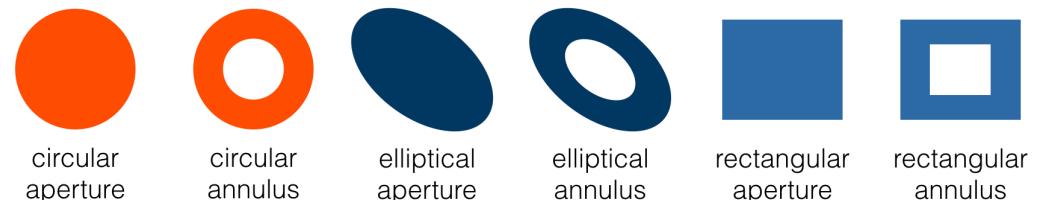
photutils.aperture



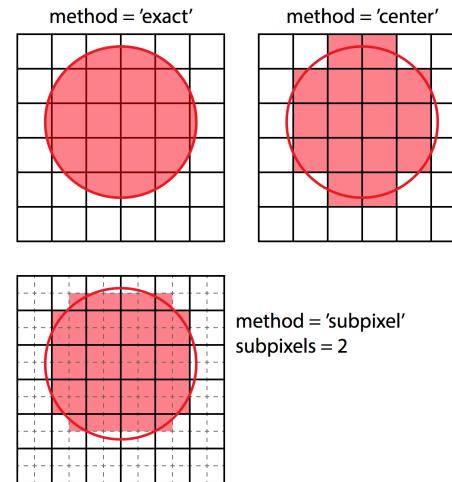
QTable length=3

id	xcenter	ycenter	aperture_sum_0	aperture_sum_err_0	aperture_sum_1	aperture_sum_err_1
	pix	pix				
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1	145.1	168.3	1131.5794219396346	23.35849263294723	1950.1741825747145	47.225615152137244
2	84.5	224.1	746.160643858321	20.999164191036634	2004.473120746215	51.63625874462207
3	48.3	200.3	1250.2185660077996	22.122686708826034	1947.6843963275142	50.422058132736446

Aperture Shapes

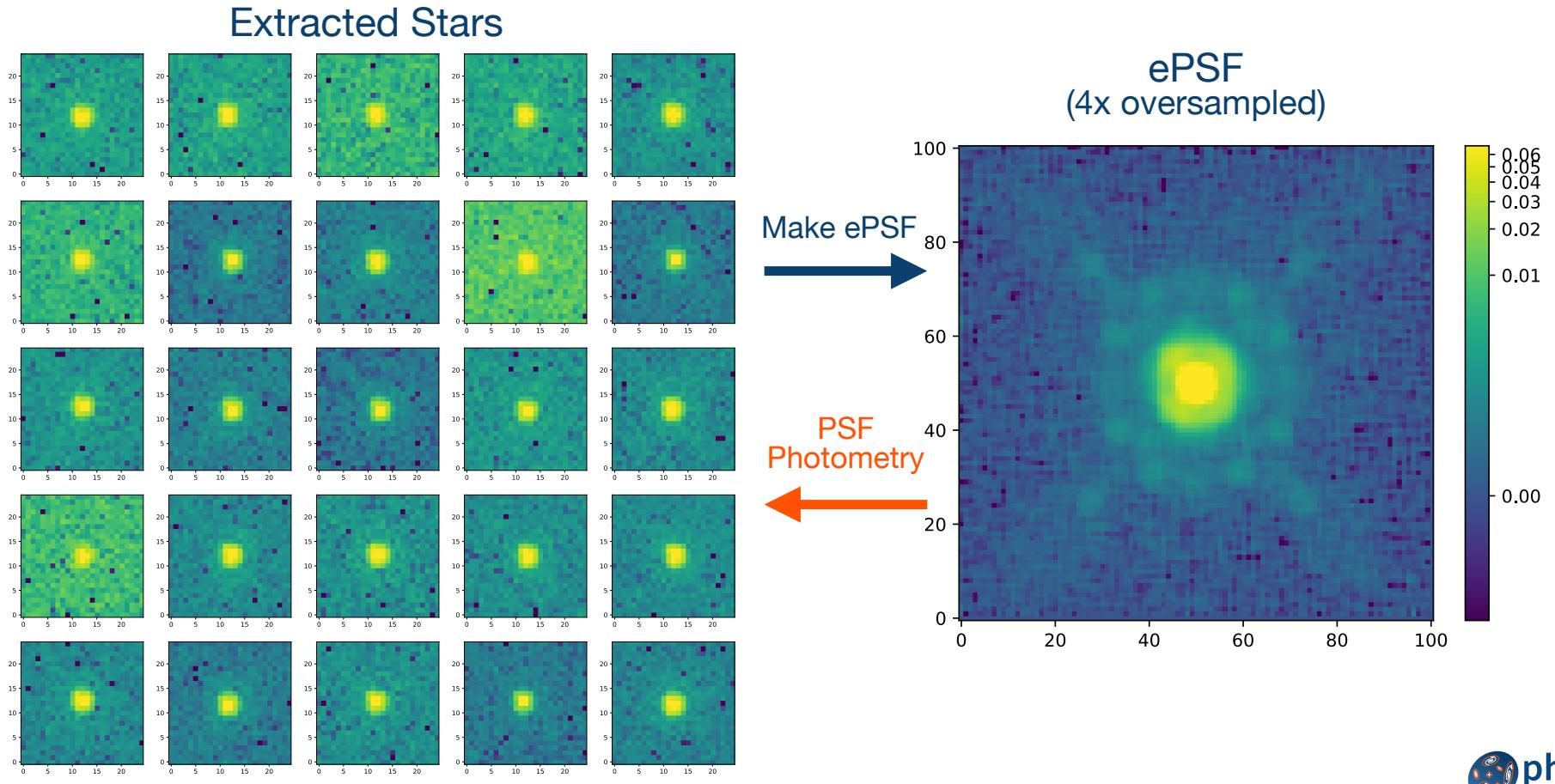


Aperture/Pixel Overlap Methods



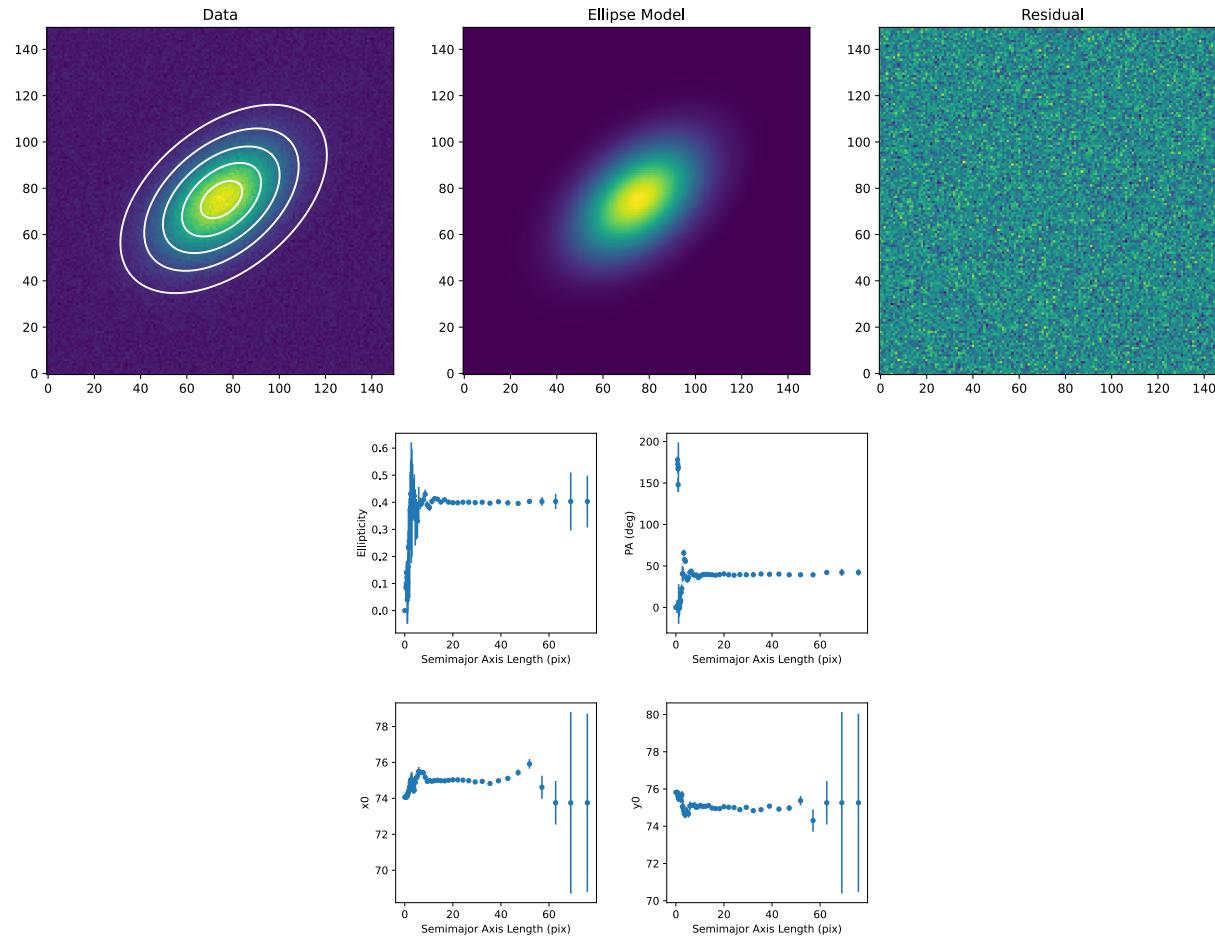
Effective PSF (ePSF) Building

photutils.psf (EPSFBuilder)



Elliptical Isophote Fitting/Analysis

photutils.isophote





Code: <https://github.com/astropy/photutils>



Read the Docs

Docs: <https://photutils.readthedocs.io>

The screenshot shows the homepage of the photutils documentation. At the top, there's a header bar with the GitHub logo, the word "photutils", and navigation links for "astropy", "Index", "Modules", and "Search". Below the header is a large image of a blue circle containing several astronomical objects like galaxies and stars, with the text "photutils" in large blue and orange letters next to it. Below that, it says "An Astropy Package for Photometry". A green box contains the text "Photutils is an [affiliated package](#) of Astropy that primarily provides tools for detecting and performing photometry of astronomical sources. It is an open source Python package and is licensed under a [3-clause BSD license](#)". Another green box labeled "Important" contains the text "If you use Photutils for a project that leads to a publication, whether directly or as a dependency of another package, please include an [acknowledgment and/or citation](#)." The main content area has sections for "Page Contents", "Photutils", "Getting Started", "User Documentation", and "Developer Documentation". Each section lists various sub-topics.

Page Contents

Photutils

- Getting Started
- User Documentation
- Developer Documentation

Important

If you use Photutils for a project that leads to a publication, whether directly or as a dependency of another package, please include an [acknowledgment and/or citation](#).

Getting Started

- Installation
- What's New in Photutils 1.1?
- Overview
- Pixel Coordinate Conventions
- Getting Started with Photutils
- Reporting Issues and Contributing
- Citing Photutils
- License
- Changelog

User Documentation

- Background Estimation (`photutils.background`)
- Source Detection (`photutils.detection`)
- Grouping Algorithms
- Aperture Photometry (`photutils.aperture`)
- PSF Photometry (`photutils.psf`)
- Building an effective Point Spread Function (ePSF)
- PSF Matching (`photutils.psf.matching`)
- Image Segmentation (`photutils.segmentation`)
- Centroids (`photutils.centroids`)
- Morphological Properties (`photutils.morphology`)
- Elliptical Isophote Analysis (`photutils.isophote`)
- Geometry Functions (`photutils.geometry`)
- Datasets (`photutils.datasets`)
- Utility Functions (`photutils.utils`)