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# **SpectRes Documentation**

*Release 2.1.1*

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SpectRes is a Python function which efficiently resamples spectra and their associated uncertainties onto an arbitrary wavelength grid. The function works with any grid of wavelength values, including non-uniform sampling, and preserves the integrated flux. This may be of use for binning data to increase the signal to noise ratio, obtaining synthetic photometry, or resampling model spectra to match the sampling of observational data.



# CHAPTER 1

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## Installation

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SpectRes can be installed using pip

```
pip install spectres
```





## CHAPTER 2

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### Documentation

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The code is developed at [github.com/ACCarnall/spectres](https://github.com/ACCarnall/spectres). Take a look in the examples folder for some more guidance. For an explanation of how the code works take a look at [ArXiv1705.05165](https://arxiv.org/abs/1705.05165). Please consider citing this publication if you use SpectRes in your research.



`spectres.spectres` (*new\_wavs*, *spec\_wavs*, *spec\_fluxes*, *spec\_errs=None*, *fill=None*, *verbose=True*)  
Function for resampling spectra (and optionally associated uncertainties) onto a new wavelength basis.

**Parameters**

- **new\_wavs** (*numpy.ndarray*) – Array containing the new wavelength sampling desired for the spectrum or spectra.
- **spec\_wavs** (*numpy.ndarray*) – 1D array containing the current wavelength sampling of the spectrum or spectra.
- **spec\_fluxes** (*numpy.ndarray*) – Array containing spectral fluxes at the wavelengths specified in *spec\_wavs*, last dimension must correspond to the shape of *spec\_wavs*. Extra dimensions before this may be used to include multiple spectra.
- **spec\_errs** (*numpy.ndarray (optional)*) – Array of the same shape as *spec\_fluxes* containing uncertainties associated with each spectral flux value.
- **fill** (*float (optional)*) – Where *new\_wavs* extends outside the wavelength range in *spec\_wavs* this value will be used as a filler in *new\_fluxes* and *new\_errs*.
- **verbose** (*bool (optional)*) – Setting *verbose* to *False* will suppress the default warning about *new\_wavs* extending outside *spec\_wavs* and “fill” being used.

**Returns**

- **new\_fluxes** (*numpy.ndarray*) – Array of resampled flux values, first dimension is the same length as *new\_wavs*, other dimensions are the same as *spec\_fluxes*.
- **new\_errs** (*numpy.ndarray*) – Array of uncertainties associated with fluxes in *new\_fluxes*. Only returned if *spec\_errs* was specified.



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spectres () (*in module spectres*), 7