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# **scotchcorner Documentation**

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Documentation for the corner plotting module `scotchcorner`. Contents:

**class** `scotchcorner.Bounded_2d_kde` (*pts*, *xlow=None*, *xhigh=None*, *ylow=None*, *yhigh=None*,  
\**args*, \*\**kwargs*)

Represents a two-dimensional Gaussian kernel density estimator for a probability distribution function that exists on a bounded domain (by [Ben Farr](#)).

**evaluate** (*pts*)

Return an estimate of the density evaluated at the given points.

**xhigh**

The upper bound of the x domain.

**xlow**

The lower bound of the x domain.

**yhigh**

The upper bound of the y domain.

**ylow**

The lower bound of the y domain.

**class** `scotchcorner.scotchcorner` (*data*, *bins=20*, *ratio=3*, *labels=None*, *truths=None*,  
*datatitle=None*, *showlims=None*, *limlinestyle='dotted'*,  
*showpoints=True*, *showcontours=False*, *hist\_kwargs={}*,  
*truths\_kwargs={}*, *scatter\_kwargs={}*, *contour\_kwargs={}*,  
*contour\_levels=[0.5, 0.9]*, *show\_level\_labels=True*,  
*use\_math\_text=True*, *limits=None*, *contour\_limits=None*,  
*figsize=None*, *mplparams=None*, *thinpoints=1.0*, *subtract\_truths=None*)

Create a corner-style plot.

**data** [`numpy.ndarray` or `pandas.DataFrame`] A ( $N \times ndims$ ) array of values for the *ndims* parameters

**bins** [int, optional, default: 20] The number of bins in the 1D histogram plots

**ratio** [int, optional, default: 3] The ratio of the size of 1D histograms to the size of the joint plots

**labels** [list, optional] A list of names for each of the *ndims* parameters. These are used for the axes labels. If *data* is a `pandas.DataFrame` then the column names of that will be used instead.

**truths** [list, optional, default: None] A list of the true values of each parameter

**datatitle** [string, optional] A title for the data set to be added as a legend

**showlims** [string, optional, default: None] Show edges/borders at the plots limits. Use 'hist' for limits on the 1D histogram plots, 'joint' for borders around 2D joint plots, or 'both' for borders on the 1D and 2D plots. The default (None) is for no borders.

**limlinestyle** [default: 'dotted'] The line style for the plot borders

**hist\_kwargs** [dict] A dictionary of keywords arguments for the histogram function

**truth\_kwargs** [dict] A dictionary of keyword arguments for plotting true values

**showpoints: bool, default: True** Show the data points in the 2D joint parameter plots

**thinpoints** [float, default: 1.0] Thin-down the number of points being plotted in the 2D scatter plots by this factor

**scatter\_kwargs** [dict] A dictionary of keyword arguments for the scatter plot function

**showcontours** [bool, default: False] Show KDE probability contours for the 2D joint parameter plots (with levels defined by *contour\_levels*)

- contour\_kwargs** [dict] A dictionary of keyword arguments for the contour plot function
- contour\_levels** [list, default: [0.5, 0.9]] A list of values between 0 and 1 indicating the probability contour confidence intervals to plot (defaulting to 50% and 90% contours)
- show\_level\_labels** [bool, default: True] Add labels on the contours levels showing their probability
- use\_math\_text** [bool, default: True] Use math text scientific notation for parameter tick mark labelling
- limits** [list, default: None] A list of tuples giving the lower and upper limits for each parameter. If limits for some parameters are not known/required then an empty tuple (or *None* within a two value tuple) must be placed in the list for that parameter
- contour\_limits** [list, default: None] A list of tuples giving the lower and upper limits for each parameter for use when creating credible interval contour for joint plots. If limits for some parameters are not known/required then an empty tuple (or *None* within a two value tuple) must be placed in the list for that parameter
- subtract\_truths** [list or tuple, optional, default: None] A list/tuple of indices of parameters for which you want to show the distribution centred such that true value is zero. This is only relevant if *truths* are supplied.
- figsize** [tuple] A two value tuple giving the figure size
- mplparams** [dict] A dictionary containing matplotlib configuration values
- add\_data** (*data*, *hist\_kwargs*={}, *datatitle*=None, *showpoints*=True, *showcontours*=False, *scatter\_kwargs*={}, *contour\_kwargs*={}, *truths*=None, *truths\_kwargs*={}, *contour\_levels*=[0.5, 0.9], *limits*=None, *contour\_limits*=None, *show\_level\_labels*=True, *thinpoints*=1.0)  
Add another data set to the plots, *hist\_kwargs* are required.
- fig**  
Return the `matplotlib.figure.Figure`
- format\_exponents\_in\_label\_single\_ax** (*ax*)  
Routine for a single axes instance (by Greg Ashton)
- get\_axis** (*param*)  
Return the axis for the given “param” (for joint axes “param” should be the required parameters separated by “vs”)
- plot\_bounded\_2d\_kde\_contours** (*ax*, *pts*, *xlow*=None, *xhigh*=None, *ylo*=None, *yhigh*=None, *transform*=None, *gridsize*=250, *clip*=None)  
Function (based on that in *plotutils* by Will Farr and edited by Ben Farr) for plotting contours from a bounded 2d KDE.
- savefig** (*filename*)  
Save the figure
- filename** [str, required] The filename of the figure to save. The figure format is determined by the file extension.
- show** ()  
Show the figure
- update\_label** (*old\_label*, *exponent\_text*)  
Method to transform given label into the new label (this function comes from [this patch](#) to *corner.py* by Greg Ashton)

# CHAPTER 1

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