MPL Plotter Documentation

Antonio López Rivera

March 2022

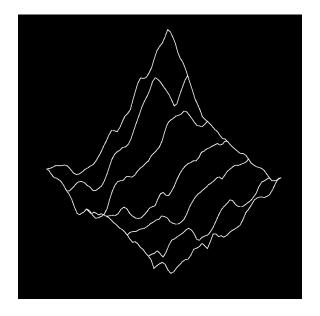




TABLE OF CONTENTS

	1.1 1.2 1.3	Comparisons			
	1 2		3		
	1.3	Placeholders	11		
	1.4	Panes	11		
2	3D		13		
	2.1	Plotting Methods	13		
	2.2	Placeholders			
3	Colors				
	3.1	Methods	19		
	3.2	Color Schemes	20		
4	Pres	sets	21		
	4.1	Custom	21		
	4.2	Precision	22		
	4.3	Publication	22		
Рy	thon	Module Index	23		
Inc	dex		24		

Making plots for technical documents can be a time sink. MPL Plotter aims to reduce that overhead by allowing you to effortlessly and concisely

- Generate publication quality figures with a single call
- Compare data by plotting different curves in a single plot
- Visualize different kinds of data in figures with many plots

It is opinionated but built with flexibility in mind, which practically means that no default can't be changed, and any and all further customization with Matplotlib is compatible. From ticks to legends to extra axes to whatever suits your needs. There's two ways to use MPL Plotter:

- Calls to the 2D and 3D plotting functions
- Using presets, either those shipped with the library, or custom ones

It does the job for me and I expand it when it can't. Hope you find some use in it!

CHAPTER

ONE

2D

1.1 Comparisons

comparison(x, y, f=None, show=False, autocolor=True, top=None, bottom=None, left=None, right=None, wspace=None, hspace=None, **kwargs)

Inputs

The table below displays the supported numerical input combinations, where:

- array: List or NumPy array with numerical values
- [...]: List containing ...
- result: <curves>

Table 1.1: Valid input combinations.

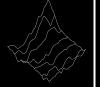
X	У	Result	Notes
array	array	1	
array	[array, array]	2	Both y's share a single 'x
[array, array]	[array, array]	2	Both x's share a single 'y
[n*[array]]	[n*[array]]	n	Each y has an x

Arguments

Arguments are internally classified as FIGURE arguments, AXIS arguments, PLURAL arguments and CURVE arguments, namely:

- Figure Select few arguments which may be input only once in the plotting process, so as to avoid conflicts. Ieg: passing *grid=True* twice (*plt.grid*(...)) will result in no grid being drawn. These are removed from the keyword arguments and used in the last *comparison* call.
- Plural Arguments with a keyword equal to any of the arguments which can be passed to the

line



2D plotter, in plural tense. The line plotter is chosen as it shares all general arguments with the other 2D plotter functions. The plural arguments are assumed to be

lists of length equal to the number of curves

and thus modify each curve. Ieg: colors=['red', 'green', 'blue'] will set the color of each curve to 'red', 'green' and 'blue' respectively in a 3-curve plot.

Defaults

The limits of the plot will be adjusted to the upper and lower limits of all 'x's and 'y's.

Parameters

- x (list of list or list of np.ndarray) Domains.
- y(list of list or list of np.ndarray) Values.
- **f** (list of plot) Functions used to plot y(x)
- **kwargs** MPL Plotter plotting class keyword arguments for further customization

1.2 Plotting Methods

```
class canvas
     Bases: object
    method backend()
     method fonts()
         Fonts
         Reference:
           • https://matplotlib.org/2.0.2/users/customizing.html
         Pyplot method: plt.rcParams['<category>.<item>'] = <>
    method_setup()
    method_figure()
    method_grid()
class attributes
     Bases: object
    method_background_color()
    method_workspace_style()
    method_cb()
    method_legend()
```



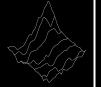
```
method_resize_axes()
    method_title()
    method_axis_labels()
    method_spines()
    method_ticks()
        Defaults
class plot
    Bases:
            mpl_plotter.two_d.methods.canvas, mpl_plotter.two_d.methods.
    attributes
    init()
    run()
    main()
    finish()
    method_save()
    method_show()
```



class line (x=None, y=None, line_width=2, color='darkred', cmap='RdBu_r', alpha=None, norm=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=None, shape_and_position=111, resize_axes=True, scale=None, aspect=1, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, spine_color=None, spines_removed=(0, 0, 1, 1), x_upper_bound=None, x_lower_bound=None, y_upper_bound=None, y_lower_bound=None, x_bounds=None, y_bounds=None, demo_pad_plot=False, x_upper_resize_pad=0, *x_lower_resize_pad=0*, *y_upper_resize_pad=0*, *y_lower_resize_pad=0*, *grid=True*, grid_color='lightgrey', grid_lines='-.', title=None, title_size=12, title_y=1.025, title_weight=None, title_font=None, title_color=None, x_label=None, x_label_size=12, x label pad=10, x label rotation=None, x label weight=None, y label=None, *y_label_size=12*, *y_label_pad=10*, *y_label_rotation=None*, *y_label_weight=None*, x_tick_number=5, y_tick_number=5, x_label_coords=None, y_label_coords=None, tick_color=None, tick_label_pad=5, ticks_where=(1, 1, 0, 0), tick_label_size=10, *x_tick_label_size=None*, *y_tick_label_size=None*, *x_custom_tick_locations=None*, y_custom_tick_locations=None, fine_tick_locations=True, x_custom_tick_labels=None, y_custom_tick_labels=None, x_date_tick_labels=False, date_format='\%Y-\%m-\%d', tick_ndecimals=1, x_tick_ndecimals=None, y_tick_ndecimals=None, x_tick_rotation=None, y_tick_rotation=None, tick_labels_where=(1, 1, 0, 0), color_bar=False, cb_pad=0.2, cb_axis_labelpad=10, shrink=0.75, extend='neither', cb_title=None, cb_orientation='vertical', cb_title_rotation=None, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, cb_y_title=False, cb_top_title_pad=None, x_cb_top_title=0, cb_vmin=None, cb_vmax=None, cb_hard_bounds=False, cb_outline_width=None, cb_tick_number=5, cb_ticklabelsize=10, cb_tick_ndecimals=None, plot_label=None, legend=False, legend_loc='upper right', legend_bbox_to_anchor=None, legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, zorder=None, filename=None, *dpi=None*, *suppress=True*)

Bases: mpl_plotter.two_d.methods.plot

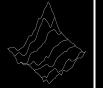
plot()



class scatter (x=None, y=None, point_size=5, marker='o', facecolors=None, color='C0', cmap='RdBu_r', alpha=None, norm=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=None, shape_and_position=111, resize_axes=True, scale=None, aspect=1, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, spine_color=None, spines_removed=(0, 0, 1, 1), x_upper_bound=None, *x_lower_bound=None*, *y_upper_bound=None*, *y_lower_bound=None*, *x_bounds=None*, y_bounds=None, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0, *y_upper_resize_pad=0*, *y_lower_resize_pad=0*, *grid=True*, *grid_color='lightgrey'*, grid_lines='-.', title=None, title_size=12, title_y=1.025, title_weight=None, title_font=None, title $color=None, x \ label=None, x \ label \ size=12, x \ label \ pad=10,$ $x_label_rotation=None, x_label_weight=None, y_label=None, y_label_size=12,$ *y_label_pad=10*, *y_label_rotation=None*, *y_label_weight=None*, *x_tick_number=5*, *y_tick_number=5*, *x_label_coords=None*, *y_label_coords=None*, *tick_color=None*, tick_label_pad=5, ticks_where=(1, 1, 0, 0), tick_label_size=10, x_tick_label_size=None, y_tick_label_size=None, x_custom_tick_locations=None, y_custom_tick_locations=None, fine_tick_locations=True, x_custom_tick_labels=None, y_custom_tick_labels=None, $x_date_tick_labels=False, date_format='%Y-%m-%d', tick_ndecimals=1,$ x_{tick} _ndecimals=None, y_{tick} _ndecimals=None, x_{tick} _rotation=None, y_tick_rotation=None, tick_labels_where=(1, 1, 0, 0), color_bar=False, cb_pad=0.2, cb_axis_labelpad=10, shrink=0.75, extend='neither', cb_title=None, cb_orientation='vertical', cb_title_rotation=None, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, *cb_y_title=False*, *cb_top_title_pad=None*, *x_cb_top_title=0*, *cb_vmin=None*, cb_vmax=None, cb_hard_bounds=False, cb_outline_width=None, cb_tick_number=5, cb_ticklabelsize=10, cb_tick_ndecimals=None, plot_label=None, legend=False, legend_loc='upper right', legend_bbox_to_anchor=None, legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, zorder=None, filename=None, dpi=None, suppress=True)

Bases: mpl_plotter.two_d.methods.plot

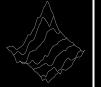
plot()



class heatmap (x=None, y=None, z=None, normvariant='SymLog', color=None, cmap='RdBu_r', alpha=None, norm=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=None, shape_and_position=111, resize_axes=True, scale=None, aspect=1, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, spine_color=None, spines_removed=(0, 0, 1, 1), x_upper_bound=None, *x_lower_bound=None*, *y_upper_bound=None*, *y_lower_bound=None*, *x_bounds=None*, y_bounds=None, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0, *y_upper_resize_pad=0*, *y_lower_resize_pad=0*, *grid=True*, *grid_color='lightgrey'*, grid_lines='-.', title=None, title_size=12, title_y=1.025, title_weight=None, title_font=None, title $color=None, x \ label=None, x \ label \ size=12, x \ label \ pad=10,$ $x_label_rotation=None, x_label_weight=None, y_label=None, y_label_size=12,$ *y_label_pad=10*, *y_label_rotation=None*, *y_label_weight=None*, *x_tick_number=5*, *y_tick_number=5*, *x_label_coords=None*, *y_label_coords=None*, *tick_color=None*, tick_label_pad=5, ticks_where=(1, 1, 0, 0), tick_label_size=10, x_tick_label_size=None, y_tick_label_size=None, x_custom_tick_locations=None, y_custom_tick_locations=None, fine_tick_locations=True, x_custom_tick_labels=None, y_custom_tick_labels=None, $x_date_tick_labels=False, date_format='%Y-%m-%d', tick_ndecimals=1,$ x_{tick} _ndecimals=None, y_{tick} _ndecimals=None, x_{tick} _rotation=None, y_tick_rotation=None, tick_labels_where=(1, 1, 0, 0), color_bar=False, cb_pad=0.2, cb_axis_labelpad=10, shrink=0.75, extend='neither', cb_title=None, cb_orientation='vertical', cb_title_rotation=None, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, *cb_y_title=False*, *cb_top_title_pad=None*, *x_cb_top_title=0*, *cb_vmin=None*, cb_vmax=None, cb_hard_bounds=False, cb_outline_width=None, cb_tick_number=5, cb_ticklabelsize=10, cb_tick_ndecimals=None, plot_label=None, legend=False, legend_loc='upper right', legend_bbox_to_anchor=None, legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, zorder=None, filename=None, dpi=None, suppress=True)

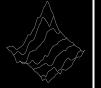
Bases: mpl_plotter.two_d.methods.plot

plot()



class quiver (*x*=*None*, *y*=*None*, *u*=*None*, *v*=*None*, *color*=*None*, *cmap*='*RdBu_r*', *alpha*=*None*, norm=None, rule=None, custom_rule=None, vector_width=0.01, vector_min_shaft=2, vector_length_threshold=0.1, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=None, shape_and_position=111, resize_axes=True, scale=None, aspect=1, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, spine_color=None, $spines_removed=(0, 0, 1, 1), x_upper_bound=None, x_lower_bound=None,$ *y_upper_bound=None*, *y_lower_bound=None*, *x_bounds=None*, *y_bounds=None*, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0, y_upper_resize_pad=0, y_lower_resize_pad=0, grid=True, grid_color='lightgrey', grid lines='-.', title=None, title size=12, title y=1.025, title weight=None, title font=None, title_color=None, x_label=None, x_label_size=12, x_label_pad=10, x_label_rotation=None, *x_label_weight=None*, *y_label_None*, *y_label_size=12*, *y_label_pad=10*, *y_label_rotation=None*, *y_label_weight=None*, *x_tick_number=5*, *y_tick_number=5*, *x_label_coords=None*, *y_label_coords=None*, *tick_color=None*, *tick_label_pad=5*, ticks_where=(1, 1, 0, 0), tick_label_size=10, x_tick_label_size=None, y_tick_label_size=None, x_custom_tick_locations=None, y_custom_tick_locations=None, fine_tick_locations=True, x_custom_tick_labels=None, y_custom_tick_labels=None, $x_date_tick_labels=False, date_format='\%Y-\%m-\%d', tick_ndecimals=1,$ *x_tick_ndecimals=None*, *y_tick_ndecimals=None*, *x_tick_rotation=None*, *y_tick_rotation=None*, *tick_labels_where=*(1, 1, 0, 0), *color_bar=False*, *cb_pad=*0.2, cb_axis_labelpad=10, shrink=0.75, extend='neither', cb_title=None, cb_orientation='vertical', cb_title_rotation=None, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, *cb_y_title=False*, *cb_top_title_pad=None*, *x_cb_top_title=0*, *cb_vmin=None*, cb_vmax=None, cb_hard_bounds=False, cb_outline_width=None, cb_tick_number=5, cb_ticklabelsize=10, cb_tick_ndecimals=None, plot_label=None, legend=False, legend_loc='upper right', legend_bbox_to_anchor=None, legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, zorder=None, filename=None, dpi=None, suppress=True) Bases: mpl_plotter.two_d.methods.plot plot() mock()

method_rule()



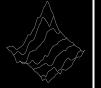
class streamline (x=None, y=None, u=None, v=None, line_width=1, line_density=2, color=None, cmap='RdBu_r', alpha=None, norm=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=None, shape_and_position=111, resize_axes=True, scale=None, aspect=1, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, spine_color=None, $spines_removed=(0, 0, 1, 1), x_upper_bound=None, x_lower_bound=None,$ *y_upper_bound=None*, *y_lower_bound=None*, *x_bounds=None*, *y_bounds=None*, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0, *y_upper_resize_pad=0*, *y_lower_resize_pad=0*, *grid=True*, *grid_color='lightgrey'*, grid lines='-.', title=None, title size=12, title y=1.025, title weight=None, title_font=None, title_color=None, x_label=None, x_label_size=12, x_label_pad=10, $x_label_rotation=None, x_label_weight=None, y_label=None, y_label_size=12,$ *y_label_pad=10*, *y_label_rotation=None*, *y_label_weight=None*, *x_tick_number=5*, *y_tick_number=5*, *x_label_coords=None*, *y_label_coords=None*, *tick_color=None*, tick_label_pad=5, ticks_where=(1, 1, 0, 0), tick_label_size=10, *x_tick_label_size=None*, *y_tick_label_size=None*, *x_custom_tick_locations=None*, *y_custom_tick_locations=None*, *fine_tick_locations=True*, *x_custom_tick_labels=None*, y_custom_tick_labels=None, x_date_tick_labels=False, date_format='\%Y-\%m-\%d', tick_ndecimals=1, x_tick_ndecimals=None, y_tick_ndecimals=None, x_{tick} -rotation=None, y_{tick} -rotation=None, $tick_{labels}$ -where=(1, 1, 0, 0), color_bar=False, cb_pad=0.2, cb_axis_labelpad=10, shrink=0.75, extend='neither', *cb_title=None*, *cb_orientation='vertical'*, *cb_title_rotation=None*, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, cb_y_title=False, cb_top_title_pad=None, *x_cb_top_title=0*, *cb_vmin=None*, *cb_vmax=None*, *cb_hard_bounds=False*, cb_outline_width=None, cb_tick_number=5, cb_ticklabelsize=10, cb_tick_ndecimals=None, plot_label=None, legend=False, legend_loc='upper right', legend_bbox_to_anchor=None, legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, *zorder=None*, *filename=None*, *dpi=None*, *suppress=True*)

```
Bases: mpl_plotter.two_d.methods.plot
```

plot()

mock()

method_rule()



class fill_area (*x*=*None*, *y*=*None*, *z*=*None*, *between*=*False*, *below*=*False*, *above*=*False*, *color*=*None*, cmap='RdBu_r', alpha=None, norm=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=None, shape_and_position=111, resize_axes=True, scale=None, aspect=1, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, spine_color=None, spines_removed=(0, 0, 1, 1), x_upper_bound=None, x_lower_bound=None, y_upper_bound=None, y_lower_bound=None, x_bounds=None, $y_bounds=None, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0,$ y_upper_resize_pad=0, y_lower_resize_pad=0, grid=True, grid_color='lightgrey', grid_lines='-.', title=None, title_size=12, title_y=1.025, title_weight=None, title font=None, title color=None, x label=None, x label size=12, x label pad=10, *x_label_rotation=None*, *x_label_weight=None*, *y_label=None*, *y_label_size=12*, *y_label_pad=10*, *y_label_rotation=None*, *y_label_weight=None*, *x_tick_number=5*, *y_tick_number=5*, *x_label_coords=None*, *y_label_coords=None*, *tick_color=None*, tick_label_pad=5, ticks_where=(1, 1, 0, 0), tick_label_size=10, x_tick_label_size=None, y_tick_label_size=None, x_custom_tick_locations=None, y_custom_tick_locations=None, fine_tick_locations=True, x_custom_tick_labels=None, y_custom_tick_labels=None, $x_date_tick_labels=False, date_format='%Y-%m-%d', tick_ndecimals=1,$ *x_tick_ndecimals=None*, *y_tick_ndecimals=None*, *x_tick_rotation=None*, *y_tick_rotation=None*, *tick_labels_where=*(1, 1, 0, 0), *color_bar=False*, *cb_pad=*0.2, cb_axis_labelpad=10, shrink=0.75, extend='neither', cb_title=None, cb_orientation='vertical', cb_title_rotation=None, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, cb_y_title=False, cb_top_title_pad=None, x_cb_top_title=0, cb_vmin=None, cb_vmax=None, cb_hard_bounds=False, cb_outline_width=None, cb_tick_number=5, cb_ticklabelsize=10, cb_tick_ndecimals=None, plot_label=None, legend=False, legend_loc='upper right', legend_bbox_to_anchor=None, legend_size=13, legend weight='normal', legend style='normal', legend handleheight=None, legend_ncol=1, show=False, zorder=None, filename=None, dpi=None, suppress=True) Bases: mpl_plotter.two_d.methods.plot plot() Fill the region below the intersection of S and Z i_below() i_above() intersection()

floating_text (ax, text, font='serif', x=0.5, y=0.5, size=20, weight='normal', color='darkred')

MPL Plotter Documentation

1.3 Placeholders

```
class MockData
    Bases: object
filled_julia (xyz_2d=False, xyz_3d=False, df=False)
spirograph()
sinewave()
waterdrop()
boltzman(x, xmid, tau)
    Evaluate the boltzman function with midpoint xmid and time constant tau over x
```

1.4 Panes

panes(x, y, f=None, fig=None, show=False, rows=1, top=None, bottom=None, left=None, right=None, wspace=None, hspace=None, **kwargs)

Inputs

The table below displays the supported numerical input combinations, where:

- array: List or NumPy array with numerical values
- [...]: List containing ...
- result: <panes><curves per pane>

Table 1.2: Valid input combinations.

Х	У	Result	Notes
array	array	11	
array	[array, array]	12	Both y's share a single 'x
[array, array]	array	21	Both x's share a single 'y
[n*[array]]	[n*[array]]	1n	Each y has an x
array	[n*[array], n*[array]]	2n	All curves in all (2) panes share a single
			x
[array, array]	[n*[array], n*[array]]	2n	All curves in each pane share an <i>x</i>
[n*[array], n*[array]]	[n*[array], n*[array]]	2n	All curves in all (2) panes have their own
			x
[n*[array], up to m]	[n*[array], up to m]	mn	All curves in all panes have their own <i>x</i>



Arguments

Arguments are internally classified as FIGURE arguments, PLURAL arguments and CURVE arguments, namely:

- **Figure arguments** Select few arguments which may be input only once in the plotting process, so as to avoid conflicts. Ieg: passing *grid=True* twice (*plt.grid*(...)) will result in no grid being drawn. These are removed from the keyword arguments and used in the last *comparison* call.
- **Special arguments** Select few arguments (ieg: *plot_labels*), which satisfy the condition of being *lists* with a length different to that of y and which, for aesthetic purposes, must be applied only once. In the case of *plot_labels*, if *plot_labels* is a list of length different to that of y, it is assumed that the nth curve of each pane shares a label with the nth curve of all other panes and so a legend displaying the labels of the last pane will be displayed.
- **Plural arguments** Arguments with a keyword equal to any of the arguments which can be passed to the *line* 2D plotter, in plural tense. The line plotter is chosen as it shares all general arguments with the other 2D plotter functions. The plural arguments are assumed to be *lists of length equal to the number of panes* and thus modify each pane. Ieg: x_tick_labels=[1, 2, 3] will set the tick labels of the x axes to 1, 2 and 3 respectively in a 3-pane plot.
- **Curve arguments** Curve arguments are passed as plurals to the comparison function, as they are *lists* with a length different to that of y (thus they can't apply to each pane) and they are assumed to have a length equal to the number of curves in each plot.



CHAPTER

TWO

3D

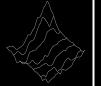
2.1 Plotting Methods

```
class canvas
    Bases: object
    method_backend()
    method_fonts()
        Fonts Reference:
           • https://matplotlib.org/2.0.2/users/customizing.html
         Pyplot method: plt.rcParams['<category>.<item>'] = <>
    method_figure()
    method_setup()
    method_grid()
    method_pane_fill()
class attributes
    Bases: object
    method_background_color()
    method_workspace_style()
    method_legend()
    method_resize_axes()
    method_title()
    method_axis_labels()
    method_spines()
    method_ticks()
    method_remove_axes()
```



```
method_scale()
class plot
    Bases: mpl_plotter.three_d.methods.canvas, mpl_plotter.three_d.methods.
    attributes
    init()
    run()
    main()
    finish()
    method_save()
    method_show()
class color
    Bases: object
    method_cb()
class surf
    Bases: mpl_plotter.three_d.methods.color
    custom()
    method_lighting()
```

method_edges_to_rgba()



class line (x=None, y=None, z=None, line_width=5, color='darkred', cmap='RdBu_r', alpha=1, x_scale=None, y_scale=None, z_scale=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=(5, 4), shape_and_position=111, azim=- 138, elev=19, remove_axis=None, prune=None, resize_axes=True, aspect_equal=False, box_to_plot_pad=10, spines_juggled=(1, 0, 2), spine_color=None, blend_edges=False, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, pane_fill=None, x_upper_bound=None, *x_lower_bound=None*, *y_upper_bound=None*, *y_lower_bound=None*, *z_upper_bound=None*, *z_lower_bound=None*, *x_bounds=None*, *y_bounds=None*, *z_bounds=None*, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0, y_upper_resize_pad=0, y lower resize pad=0, z upper resize pad=0, z lower resize pad=0, show axes=True, grid=True, grid_color='lightgrey', grid_lines='-.', title=None, title_weight='normal', title_size=12, title_y=1.025, title_color=None, title_font=None, x_label='x', x_label_weight='normal', x_label_size=12, x_label_pad=7, x_label_rotation=None, y_label='y', y_label_weight='normal', y_label_size=12, y_label_pad=7, y_label_rotation=None, z_label='z', z_label_weight='normal', z_label_size=12, z_label_pad=7, z_label_rotation=None, $x_{tick_number=5}, x_{tick_labels=None}, x_{custom_tick_labels=None},$ *x_custom_tick_locations=None*, *y_tick_number=5*, *y_tick_labels=None*, y_custom_tick_labels=None, y_custom_tick_locations=None, z_tick_number=5, *z_tick_labels=None*, *z_custom_tick_labels=None*, *z_custom_tick_locations=None*, *x_tick_rotation=None*, *y_tick_rotation=None*, *z_tick_rotation=None*, *tick_color=None*, *x_tick_label_pad=4*, *y_tick_label_pad=4*, *z_tick_label_pad=4*, *x_tick_ndecimals=1*, y_tick_ndecimals=1, z_tick_ndecimals=1, tick_label_size=10, x_tick_label_size=None, y_tick_label_size=None, z_tick_label_size=None, plot_label=None, legend=False, legend_loc='upper right', legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, newplot=False, filename=None, *dpi=None*, *suppress=True*) Bases: mpl_plotter.three_d.methods.plot

MPL Plotter Documentation

plot()
mock()



class scatter (x=None, y=None, z=None, point_size=30, marker='o', facecolors=None, alpha=1, color='darkred', cmap='RdBu_r', color_rule=None, color_bar=False, cb_pad=0.1, extend='neither', cb_title=None, cb_orientation='vertical', cb_axis_labelpad=10, *cb_tick_number=5*, *cb_tick_ndecimals=5*, *shrink=0.75*, *cb_outline_width=None*, cb_title_rotation=None, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, cb_y_title=False, *cb_top_title_pad=None*, *x_cb_top_title=0*, *cb_vmin=None*, *cb_vmax=None*, cb_ticklabelsize=10, cb_hard_bounds=False, x_scale=None, y_scale=None, z_scale=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=(5, 4), shape_and_position=111, azim=- 138, elev=19, remove_axis=None, prune=None, resize_axes=True, aspect equal=False, box to plot pad=10, spines juggled=(1,0,2), spine color=None, blend_edges=False, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, pane_fill=None, x_upper_bound=None, *x_lower_bound=None*, *y_upper_bound=None*, *y_lower_bound=None*, z_upper_bound=None, z_lower_bound=None, x_bounds=None, y_bounds=None, z_bounds=None, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0, y_upper_resize_pad=0, y_lower_resize_pad=0, z_upper_resize_pad=0, z_lower_resize_pad=0, show_axes=True, grid=True, grid_color='lightgrey', grid_lines='-.', title=None, title_weight='normal', title_size=12, title_y=1.025, title_color=None, title_font=None, x_label='x', x_label_weight='normal', x_label_size=12, x_label_pad=7, *x_label_rotation=None*, *y_label='y'*, *y_label_weight='normal'*, *y_label_size=12*, y_label_pad=7, y_label_rotation=None, z_label='z', z_label_weight='normal', *z_label_size=12*, *z_label_pad=7*, *z_label_rotation=None*, *x_tick_number=5*, *x_tick_labels=None*, *x_custom_tick_labels=None*, *x_custom_tick_locations=None*, *y_tick_number=5*, *y_tick_labels=None*, *y_custom_tick_labels=None*, *y_custom_tick_locations=None*, *z_tick_number=5*, *z_tick_labels=None*, z_custom_tick_labels=None, z_custom_tick_locations=None, x_tick_rotation=None, *y_tick_rotation=None, z_tick_rotation=None, tick_color=None, x_tick_label_pad=4*, *y_tick_label_pad=4*, *z_tick_label_pad=4*, *x_tick_ndecimals=1*, *y_tick_ndecimals=1*, z_tick_ndecimals=1, tick_label_size=10, x_tick_label_size=None, y_tick_label_size=None, *z_tick_label_size=None*, *plot_label=None*, *legend=False*, *legend_loc='upper right'*, legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, newplot=False, filename=None, *dpi=None*, *suppress=True*)

Bases: mpl_plotter.three_d.methods.plot, mpl_plotter.three_d.methods.color

plot()



class surface (x=None, y=None, z=None, rstride=1, cstride=1, $line_width=0.1$, lighting=False, antialiased=False, shade=False, cmap='RdBu_r', cmap_lighting=None, color_rule=None, norm=None, color=None, color_bar=False, cb_pad=0.1, extend='neither', cb_title=None, cb_orientation='vertical', cb_axis_labelpad=10, cb_tick_number=5, cb_tick_ndecimals=5, shrink=0.75, cb_outline_width=None, cb_title_rotation=None, cb_title_style='normal', cb_title_size=10, cb_top_title_y=1, cb_ytitle_labelpad=10, cb_title_weight='normal', cb_top_title=False, cb_y_title=False, cb_top_title_pad=None, x_cb_top_title=0, cb_vmin=None, cb_vmax=None, cb_ticklabelsize=10, cb_hard_bounds=False, alpha=1, edge_color='black', edges_to_rgba=False, x_scale=None, y_scale=None, z_scale=None, backend='Qt5Agg', font='serif', math_font='dejavuserif', font_color='black', font_size_increase=0, fig=None, ax=None, figsize=(5, 4), shape_and_position=111, azim=- 138, elev=19, remove axis=None, prune=None, resize axes=True, aspect_equal=False, box_to_plot_pad=10, spines_juggled=(1, 0, 2), spine_color=None, blend_edges=False, workspace_color=None, workspace_color2=None, background_color_figure='white', background_color_plot='white', background_alpha=1, style=None, light=None, dark=None, pane_fill=None, x_upper_bound=None, *x_lower_bound=None*, *y_upper_bound=None*, *y_lower_bound=None*, z_upper_bound=None, z_lower_bound=None, x_bounds=None, y_bounds=None, z_bounds=None, demo_pad_plot=False, x_upper_resize_pad=0, x_lower_resize_pad=0, y_upper_resize_pad=0, y_lower_resize_pad=0, z_upper_resize_pad=0, z_lower_resize_pad=0, show_axes=True, grid=True, grid_color='lightgrey', grid_lines='-.', title=None, title_weight='normal', title_size=12, title_y=1.025, title_color=None, title_font=None, x_label='x', x_label_weight='normal', x_label_size=12, x_label_pad=7, $x_label_rotation=None, y_label='y', y_label_weight='normal', y_label_size=12,$ *y_label_pad=7*, *y_label_rotation=None*, *z_label='z'*, *z_label_weight='normal'*, *z_label_size=12*, *z_label_pad=7*, *z_label_rotation=None*, *x_tick_number=5*, $x_tick_labels=None, x_custom_tick_labels=None, x_custom_tick_locations=None,$ *y_tick_number=5*, *y_tick_labels=None*, *y_custom_tick_labels=None*, *y_custom_tick_locations=None*, *z_tick_number=5*, *z_tick_labels=None*, z_custom_tick_labels=None, z_custom_tick_locations=None, x_tick_rotation=None, *y_tick_rotation=None*, *z_tick_rotation=None*, *tick_color=None*, *x_tick_label_pad=4*, y_tick_label_pad=4, z_tick_label_pad=4, x_tick_ndecimals=1, y_tick_ndecimals=1, z_tick_ndecimals=1, tick_label_size=10, x_tick_label_size=None, y_tick_label_size=None, z_tick_label_size=None, plot_label=None, legend=False, legend_loc='upper right', legend_size=13, legend_weight='normal', legend_style='normal', legend_handleheight=None, legend_ncol=1, show=False, newplot=False, filename=None, dpi=None, suppress=True)Bases: mpl_plotter.three_d.methods.plot, mpl_plotter.three_d.methods.

```
plases: mpi_piotter.three_a.methods.piot, mpi_piotter.three_a.methods
    surf

plot()
    mock()

floating_text(ax, text, font, x, y, z, size=20, weight='normal', color='darkred')
```



```
class MockData
    Bases: object
    waterdrop3d()
    random3d()
    hill()
```

CHAPTER

THREE

COLORS

3.1 Methods

complementary (color, fmt='hex')

Return complementary of [R, G, B] or hex color.

Parameters fmt (string) – Output format: 'hex' or 'rgb'.

delta(color, factor, fmt='hex')

Darker or lighten the input color by a percentage of <factor> ([-1, 1]) of the color spectrum (0-255).

Parameters

- **fmt** (*string*) Output format: 'hex' or 'rgb'.
- **factor** (*float*) [-1, 1] Measure in which the color will be modified.

mapstack (maps, fractions=None, ranges=None)

Create a colormap stacking an arbitrary number of conventional Matplotlib colormaps.

Parameters

- maps (list of str) List of colormap NAMES
- **fractions** (list of float) For each original colormap, the fraction it'll take of the merged colormap. [0<fr_0<1, ...]
- ranges (list of tuple) For each original colormap, the range taken. [(0=<min<1,0<max<=1)_0,...]

Returns mpl.colors.LinearSegmentedColormap

3.2 Color Schemes

```
colorscheme_one()
custom(red, green, blue, name='coolheat', n=1024)
```

Parameters

- red List of (red fraction, y0, y1) tuples
- green List of (red fraction, y0, y1)
- blue List of (red fraction, y0, y1)
- name Colormap name
- **n** RBG quantization levels

Returns Colormap

CHAPTER

FOUR

PRESETS

4.1 Custom

```
class two_d (preset=None, preset_dir=", preset_name='preset_2d')
     Bases: object
     class line (x=None, y=None, **kwargs)
         Bases: mpl_plotter.two_d.methods.line
     class scatter(x=None, y=None, **kwargs)
         Bases: mpl_plotter.two_d.methods.scatter
     class heatmap (x=None, y=None, z=None, **kwargs)
         Bases: mpl_plotter.two_d.methods.heatmap
     class quiver(x=None, y=None, u=None, v=None, **kwargs)
         Bases: mpl_plotter.two_d.methods.quiver
     class streamline (x=None, y=None, u=None, v=None, **kwargs)
         Bases: mpl_plotter.two_d.methods.streamline
     class fill_area (x=None, y=None, z=None, **kwargs)
         Bases: mpl_plotter.two_d.methods.fill_area
class three_d (preset_dir=", preset_name='preset_3d', preset=None)
     Bases: object
     class line (x=None, y=None, z=None, **kwargs)
         Bases: mpl_plotter.three_d.methods.line
     class scatter(x=None, y=None, z=None, **kwargs)
         Bases: mpl_plotter.three_d.methods.scatter
     class surface (x=None, y=None, z=None, **kwargs)
         Bases: mpl_plotter.three_d.methods.surface
find preset (dest, preset_name)
make_preset_directory (preset_dest, preset_name)
generate_preset_2d (preset_dest=", overwrite=False, disable_warning=False, preset_name='preset_2d')
```

Parameters

- preset_dest Preset destination directory
- overwrite Overwrite found presets automatically
- disable_warning Disable overwriting warning
- preset_name Name of preset to be created

Returns None

generate_preset_3d (preset_dest=", overwrite=False, disable_warning=False, preset_name='preset_3d')

Parameters

- preset_dest Preset destination directory
- overwrite Overwrite found presets automatically
- disable_warning Disable overwriting warning
- preset_name Name of preset to be created

Returns None

4.2 Precision

4.3 Publication



PYTHON MODULE INDEX

```
С
mpl_plotter.color, 18
mpl_plotter.color.functions, 19
mpl_plotter.color.schemes, 19
mpl_plotter.presets, 20
mpl_plotter.presets.custom, 21
mpl_plotter.presets.data,22
mpl_plotter.presets.data.precision,
mpl_plotter.presets.data.publica-
      tion, 22
mpl_plotter.presets.precision, 22
mpl_plotter.presets.publication, 22
t
mpl_plotter.three_d, 12
mpl_plotter.three_d.methods, 13
mpl_plotter.three_d.mock, 17
mpl_plotter.two_d, 1
mpl_plotter.two_d.comparison, 2
mpl_plotter.two_d.methods,3
mpl_plotter.two_d.mock, 10
mpl_plotter.two_d.panes, 11
```



INDEX

```
Α
                                                  generate_preset_3d() (in module mpl_plot-
                                                          ter.presets.custom), 22
attributes (class in mpl_plotter.three_d.methods),
                                                  Н
attributes (class in mpl_plotter.two_d.methods), 3
                                                  heatmap (class in mpl_plotter.two_d.methods), 6
В
                                                  hill() (MockData method), 18
boltzman() (MockData method), 11
C
                                                  i_above() (fill_area method), 10
canvas (class in mpl_plotter.three_d.methods), 13
                                                  i_below() (fill_area method), 10
canvas (class in mpl_plotter.two_d.methods), 3
                                                  init() (plot method), 4, 14
color (class in mpl_plotter.three_d.methods), 14
                                                  intersection() (fill_area method), 10
colorscheme one()
                         (in
                              module
                                        mpl plot-
                                                  L
        ter.color.schemes), 20
                                                  line (class in mpl_plotter.three_d.methods), 14
comparison() (in module mpl_plotter.two_d.com-
                                                  line (class in mpl_plotter.two_d.methods), 4
        parison), 2
                              module
complementary()
                        (in
                                        mpl_plot-
                                                  Μ
        ter.color.functions), 19
                                                  main() (plot method), 4, 14
custom() (in module mpl_plotter.color.schemes), 20
                                                  make_preset_directory()
                                                                                      (in
                                                                                            module
custom() (surf method), 14
                                                          mpl_plotter.presets.custom), 21
D
                                                  mapstack() (in module mpl_plotter.color.functions),
delta() (in module mpl_plotter.color.functions), 19
                                                           19
                                                  method_axis_labels() (attributes method), 4,
                                                           13
fill_area (class in mpl_plotter.two_d.methods), 9
                                                  method_backend() (canvas method), 3, 13
filled julia() (MockData method), 11
                                                  method_background_color()
                                                                                          (attributes
find_preset() (in module mpl_plotter.presets.cus-
                                                          method), 3, 13
        tom), 21
                                                  method_cb() (attributes method), 3
finish() (plot method), 4, 14
                                                  method cb() (color method), 14
floating_text()
                        (in
                              module
                                        mpl_plot-
                                                  method_edges_to_rgba() (surf method), 14
        ter.three_d.methods), 17
                                                  method_figure()(canvas method), 3, 13
floating_text()
                        (in
                              module
                                        mpl_plot-
                                                  method_fonts()(canvas method), 3, 13
        ter.two_d.methods), 10
                                                  method grid() (canvas method), 3, 13
                                                  method_legend() (attributes method), 3, 13
G
                                                  method_lighting() (surf method), 14
generate_preset_2d() (in module mpl_plot-
                                                  method_pane_fill() (canvas method), 13
        ter.presets.custom), 21
```



```
method_remove_axes() (attributes method), 13
                                             mpl_plotter.color.functions
method_resize_axes() (attributes method), 3,
                                                module, 19
                                             mpl_plotter.color.schemes
method_rule() (quiver method), 8
                                                module, 19
                                             mpl_plotter.presets
method_rule() (streamline method), 9
method_save() (plot method), 4, 14
                                                module, 20
method_scale() (attributes method), 13
                                             mpl_plotter.presets.custom
method_setup() (canvas method), 3, 13
                                                module, 21
method_show() (plot method), 4, 14
                                             mpl_plotter.presets.data
method_spines() (attributes method), 4, 13
                                                module, 22
method_ticks() (attributes method), 4, 13
                                             mpl_plotter.presets.data.precision
method title() (attributes method), 4, 13
                                                module, 22
method_workspace_style()
                                   (attributes
                                            mpl_plotter.presets.data.publication
       method), 3, 13
                                                module, 22
mock () (fill_area method), 10
                                             mpl_plotter.presets.precision
mock () (heatmap method), 7
                                                module, 22
mock () (line method), 5, 15
                                             mpl_plotter.presets.publication
mock () (quiver method), 8
                                                module, 22
mock () (scatter method), 6, 16
                                             mpl_plotter.three_d
mock () (streamline method), 9
                                                module, 12
mock () (surface method), 17
                                             mpl_plotter.three_d.methods
MockData (class in mpl_plotter.three_d.mock), 18
                                                module, 13
MockData (class in mpl_plotter.two_d.mock), 11
                                             mpl_plotter.three_d.mock
module
                                                module, 17
   mpl_plotter.color, 18
                                             mpl_plotter.two_d
   mpl_plotter.color.functions, 19
                                                module, 1
   mpl_plotter.color.schemes, 19
                                             mpl_plotter.two_d.comparison
   mpl_plotter.presets, 20
                                                module, 2
   mpl_plotter.presets.custom, 21
                                             mpl_plotter.two_d.methods
   mpl_plotter.presets.data, 22
                                                module, 3
   mpl_plotter.presets.data.preci-
                                             mpl_plotter.two_d.mock
       sion, 22
                                                module, 10
   mpl_plotter.presets.data.publica-
                                             mpl_plotter.two_d.panes
       tion, 22
                                                module, 11
   mpl_plotter.presets.precision, 22
                                             Р
   mpl_plotter.presets.publication,
       22
                                             panes () (in module mpl_plotter.two_d.panes), 11
                                             plot (class in mpl_plotter.three_d.methods), 14
   mpl_plotter.three_d, 12
                                             plot (class in mpl_plotter.two_d.methods), 4
   mpl_plotter.three_d.methods, 13
   mpl_plotter.three_d.mock, 17
                                             plot () (fill_area method), 10
                                             plot() (heatmap method), 7
   mpl_plotter.two_d, 1
   mpl_plotter.two_d.comparison, 2
                                             plot () (line method), 5, 15
                                             plot () (quiver method), 8
   mpl_plotter.two_d.methods, 3
   mpl_plotter.two_d.mock, 10
                                             plot () (scatter method), 6, 16
   mpl_plotter.two_d.panes, 11
                                             plot () (streamline method), 9
                                             plot () (surface method), 17
mpl_plotter.color
   module, 18
```

 \bigcirc



Q

```
quiver (class in mpl_plotter.two_d.methods), 7
R
random3d() (MockData method), 18
run () (plot method), 4, 14
S
scatter (class in mpl_plotter.three_d.methods), 15
scatter (class in mpl_plotter.two_d.methods), 5
sinewave() (MockData method), 11
spirograph() (MockData method), 11
streamline (class in mpl_plotter.two_d.methods), 8
surf (class in mpl_plotter.three_d.methods), 14
surface (class in mpl_plotter.three_d.methods), 16
Т
three_d (class in mpl_plotter.presets.custom), 21
three_d.line (class in mpl_plotter.presets.custom),
        21
three_d.scatter(class in mpl_plotter.presets.cus-
        tom), 21
three_d.surface (class in mpl_plotter.presets.cus-
        tom), 21
two_d (class in mpl_plotter.presets.custom), 21
two_d.fill_area (class in mpl_plotter.presets.cus-
        tom), 21
two_d.heatmap (class in mpl_plotter.presets.cus-
        tom), 21
two_d.line (class in mpl_plotter.presets.custom), 21
two_d.quiver (class in mpl_plotter.presets.custom),
        21
two_d.scatter (class in mpl_plotter.presets.cus-
        tom), 21
two_d.streamline (class in mpl_plotter.pre-
        sets.custom), 21
W
waterdrop() (MockData method), 11
waterdrop3d() (MockData method), 18
```