MPL Plotter Documentation

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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 cant be changed, and any and all further customization with Matplotlib is compatible. From ticks to legends to extra axes to whatever suits your needs. Theres 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 cant. Hope you find some use in it!

Submodules:

CHAPTER

ONE

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 panes function supports numerical inputs in the following forms: | x | y | result | notes | | | | | | array | array | 1 | | | array | [array, array] | 2 | Both *y* `s *share* `x | | [array, array] | [array, array] | 2 | Each *y* has an *x* | | [n*[array]] | [n*[array]] | n | Each *y* has an *x* |

where

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

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.
- Curve

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.

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- **`f`** (*`list of plot`*) – Functions used to plot y(x)
- **`kwargs`** – MPL Plotter plotting class keyword arguments for further customization

CHAPTER

TWO

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()

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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()

mock()

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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()

mock()

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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()

mock()

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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()

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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()

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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()

mock()

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

CHAPTER

THREE

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

CHAPTER

FOUR

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 panes function supports numerical inputs in the following forms: | x | y | result | notes | | | | | | array | array | 11 | | | array | [array, array] | 12 | Both *y `s share `x* | | [n*[array]] | [n*[array]] | 1n | Each *y* has an *x* | | array | [array, array] | 21 | Both *y `s share `x* | | [array, array] | [array, array] | 21 | 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 *x* | | [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 *x* |

where

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

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*

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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 cant apply to each pane) and they are assumed to have a length equal to the number of curves in each plot.

CHAPTER

FIVE

3D

Submodules:

5.1 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()

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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()

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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*

plot()

mock()

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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()

mock()

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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.surf`

plot()

mock()

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

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5.2 Placeholders

class MockData

Bases: object

waterdrop3d()

random3d()

hill()

CHAPTER

SIX

COLORS

Submodules:

6.1 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 itll 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

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6.2 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

SEVEN

PRESETS

Submodules:

7.1 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*)

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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

7.2 Precision

7.3 Publication

Subpackages: Submodules:

PYTHON MODULE INDEX

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