Pyplot hlines and vlines do not use the 'lines.color' property in rcParams by default · Issue #16482 · matplotlib/matplotlib -Jinming Zhang

Terminologies:

- rcParams (runtime configuration parameters):
  - Used to specify a list of configurations for plotting the group of components(lines, axes, ticks…)
  - can be set using
    - Matplotlib.pyplot.rc, ie. plt.rc('lines', color='blue', linewidth=10)
    - plt.rc_context({dictionary of configurations}), ie. plt.rc_context({'lines.linewidth': 10})
- hlines / vlines: functions in matplotlib.pyplot to draw lines in a 2D coordinate space

Defect:

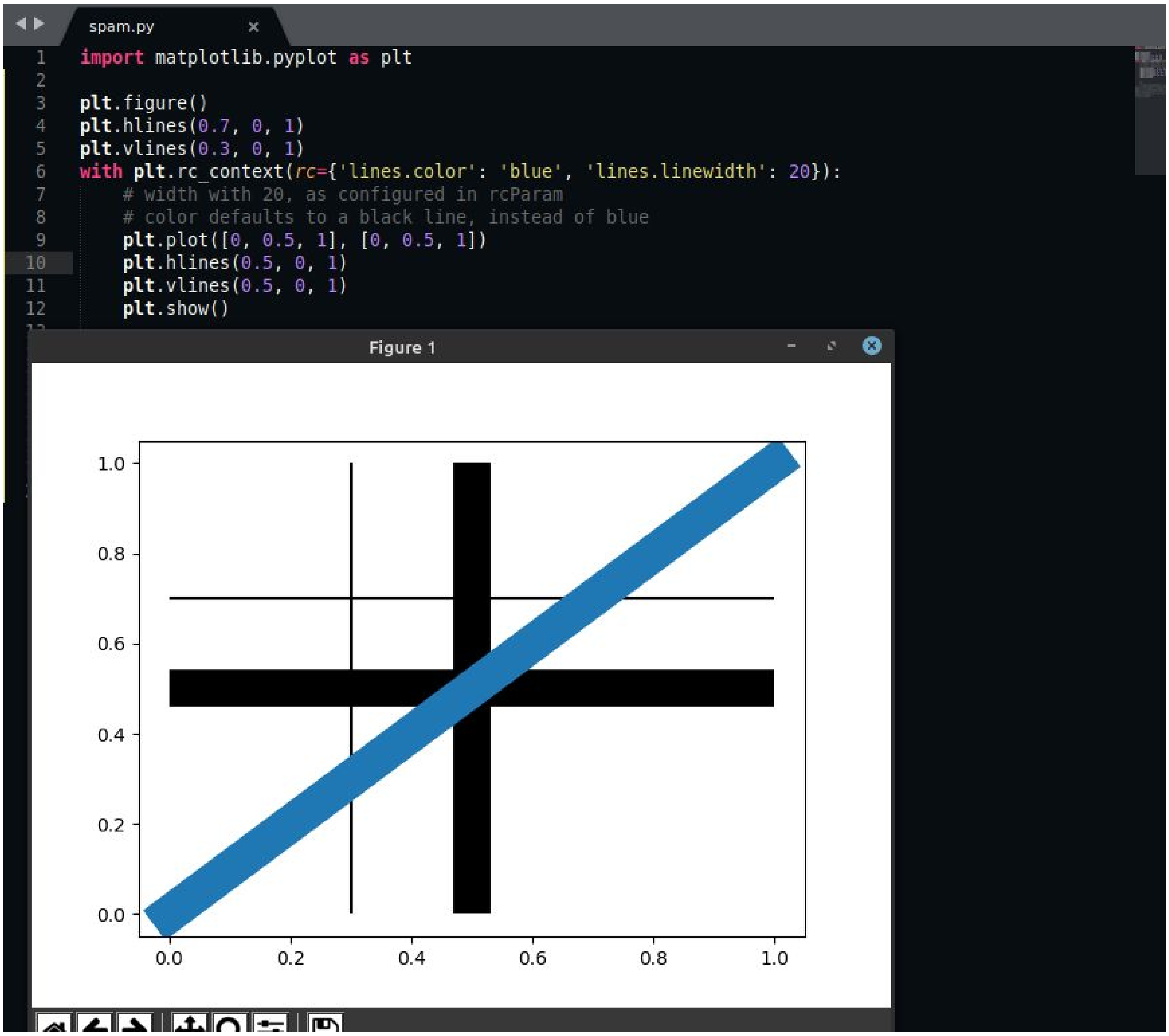
Currently, hlines and vlines do not use the 'color' property set by rcParams when 'color' is not provided in its parameters (other properties set by rcParams are applied properly).

For example, if rcParams is set as plt.rc('lines', color='blue', linewidth=10), then lines draw by hlines and vlines should have color blue and linewidth 10, if these two parameters are not provided when calling hlines and vlines. Currently, the two functions will draw lines of width 10 and default color of black, instead of blue.

Reproduce the defect:

Consider the following screenshot.

- The thin black cross is produced by the first two lines of vlines and hlines call, before the setting of rcPramas
- Defect: After setting the rcParams (of blue line color and 20 line width), the similar vlines and hlines calls (at different start position) produce a thicker corss, which shows that width in rcParams correctly takes effect, whereas color did not.
- To further demonstrate the defect, the line produced by 'plot' function applied both color and width set by rcParams



```python
import matplotlib.pyplot as plt

plt.figure()
plt.hlines(0.7, 0, 1)
plt.vlines(0.3, 0, 1)
with plt.rc_context(rc={'lines.color': 'blue', 'lines.linewidth': 20}):
    # width with 20, as configured in rcParam
    # color defaults to a black line, instead of blue
    plt.plot([0, 0.5, 1], [0, 0.5, 1])
    plt.hlines(0.5, 0, 1)
    plt.vlines(0.5, 0, 1)
    plt.show()
```

Defect scope:

Although it is a relatively simple defect, it involves the fundamental usage of matplotlib and we will need to track the code through different layers to figure out the proper fix. Considering the short time we have, the fact that we are all new to matplotlib and open source projects, I think this is a great defect to start with to contribute and get ourselves familiar with the process of contributing to matplotlib project.

Time estimation:

Less than 10 hours.

Large markers escape legend · Issue #8705 · matplotlib/matplotlib - Omar Chehab

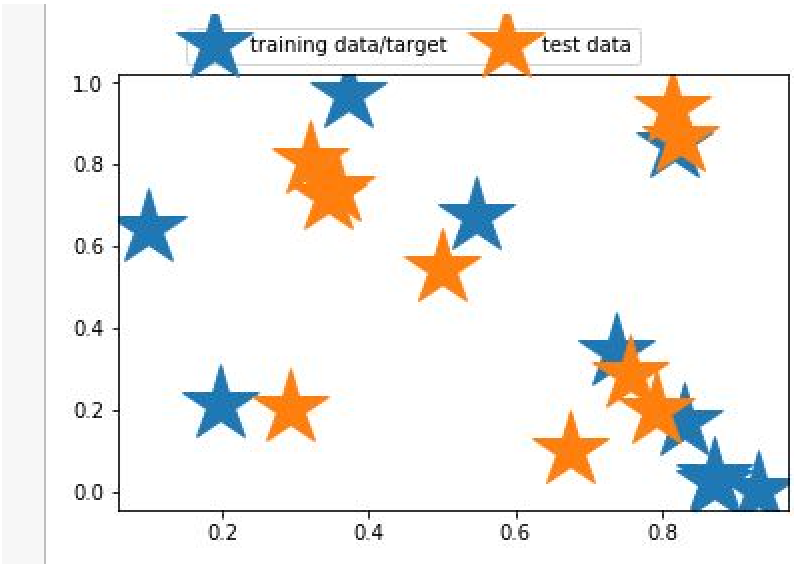
Bug Description

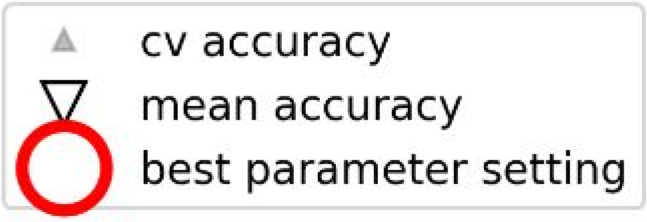
Increasing marker size leads to markers that escape the legend boundaries (or even the figure). Additionally, when there are multiple legend entries over each other, then they can overlap.

Code for reproduction

```
import numpy as np
import matplotlib.pyplot as plt

a, = plt.plot(np.random.uniform(size=10), np.random.uniform(size=10), '*',  markersize=40)

b, = plt.plot(np.random.uniform(size=10), np.random.uniform(size=10), '*',  markersize=40)
plt.legend([a, b],
        ["training data/target", "test data", "test prediction"],
        ncol=3, loc=(.1, 1.025))
```

Result





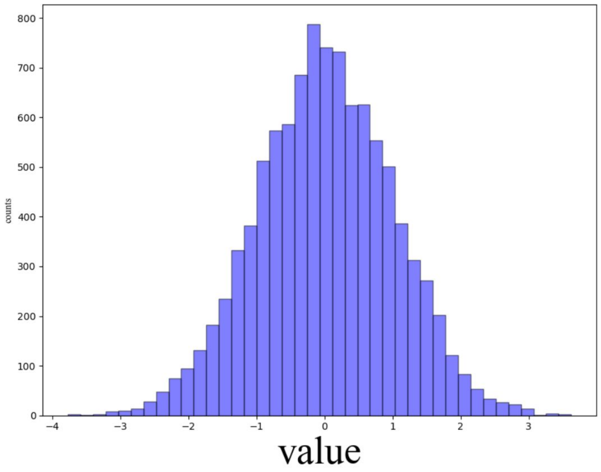
Estimated Effort

An attempt to close this issue due by a previous D01 team in 2018, there was a lot of discussion on their pull request https://github.com/matplotlib/matplotlib/pull/10765
We would need to read the discussion and understand what the maintainers expect from a solution to this problem.
It’s definitely a hairy problem that would require more than 20 hours to resolve and settle concerns.

“Size” ignored if placed before fontproperties · Issue #16389 · matplotlib/matplotlib - Robert Augustynowicz

When using the text class functionality which is a child to artist in mathplotlib, a bug has been found in its implementation. The order of the given values which affects the text of such labels makes a difference, even though the variables themselves have been specified. It was found that if the font is specified first through fontproperties, then its size set without an issue, but if the font properties is specified after then the size argument will be ignored. This is exemplified by the code below which produces the graph shown, where the axis tests are different sizes while the only difference is order of parameters in the code.

```
import numpy as np
import matplotlib.pyplot as plt
import random

data = np.random.randn(10000)
plt.hist(data, bins=40, facecolor="blue", edgecolor="black", alpha=0.5)
plt.xlabel("value", fontproperties='Times New Roman',size=40  ) # working command
plt.ylabel("counts", size=40, fontproperties='Times New Roman')  # non working
plt.show()
```



The estimated time to complete would be approximately 4 hours. The first section would be documentation and specification which also requires careful line by line debugging as to find the issue so it can be planned to be properly fixed. This process should take up to 2 hours. Then implementation of the fix must be done which could be done in an estimated hour as much of the forethought has already been done in the design and specification phase. Finally a testing phase must occur which would take another hour to ensure no other bugs occured due to the fix put into place.

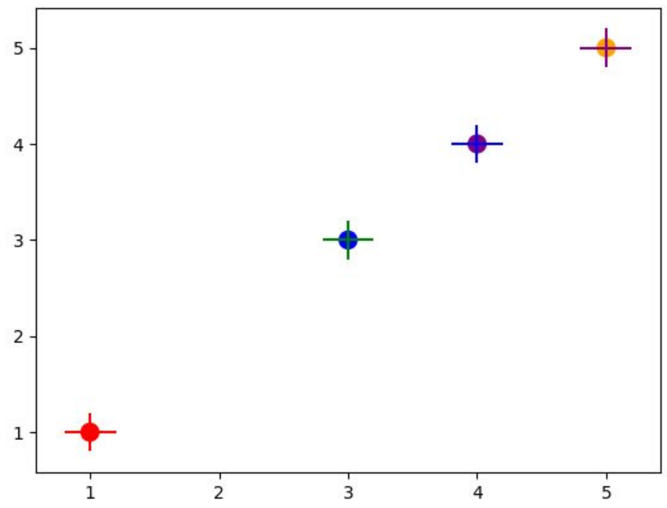
https://github.com/matplotlib/matplotlib/issues/13799 - jinyanghu
Bug description
When using variable colors for error bars, the colors are incorrect/shifted if np.nan(None) value is provided in x-axis and y-axis.

The estimated work need to complete
Need to modify the way ErrorBars object working with nan values. The correct fix is keeping all the Nan values instead of removing them from the axis. The previous PR removed Nan values before drawing and was rejected because the author simply removed the corresponding colour of invalid points before passing values to Errorbar project. The Estimated time is 5 hours.

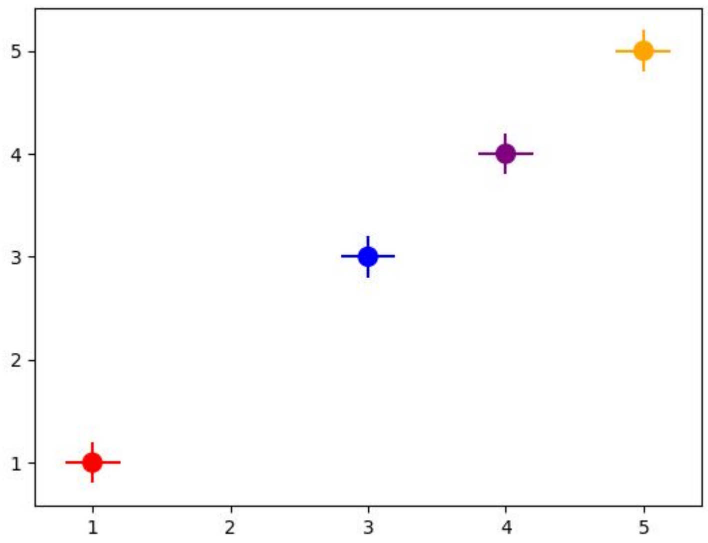
Code to reproduce bug

```
import numpy as np
import matplotlib.pyplot as plt

x = [1, np.nan, 3, 4, 5]
colors = ['red', 'green', 'blue', 'purple', 'orange']

fig = plt.figure()
ax = fig.add_subplot(1, 1, 1)
ax.scatter(x, x, c=colors, s=100)
ax.errorbar(x, x, xerr=0.2, yerr=0.2, ecolor=colors, fmt='none')
fig.savefig('errorbar_colors.png')
```

Actual output:

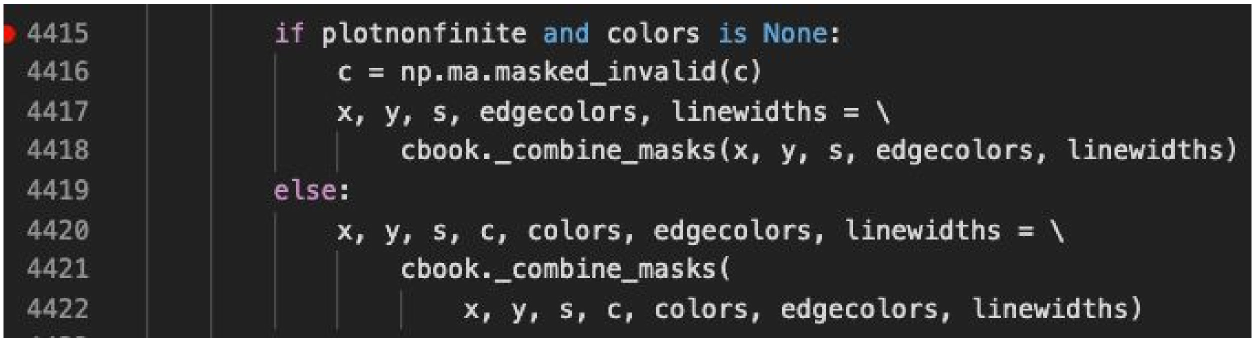


Expect output:

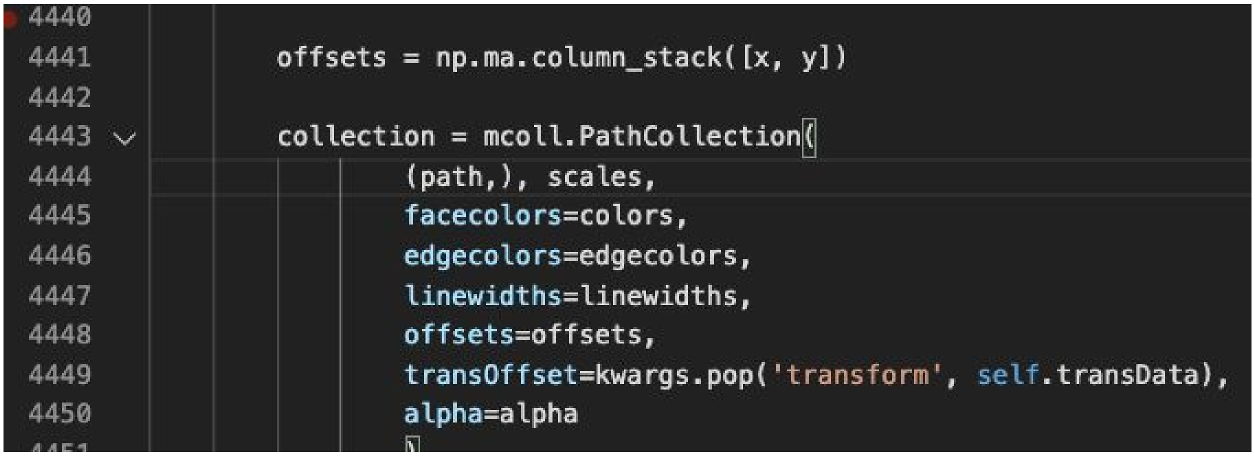


Possibly related code

Scatter object



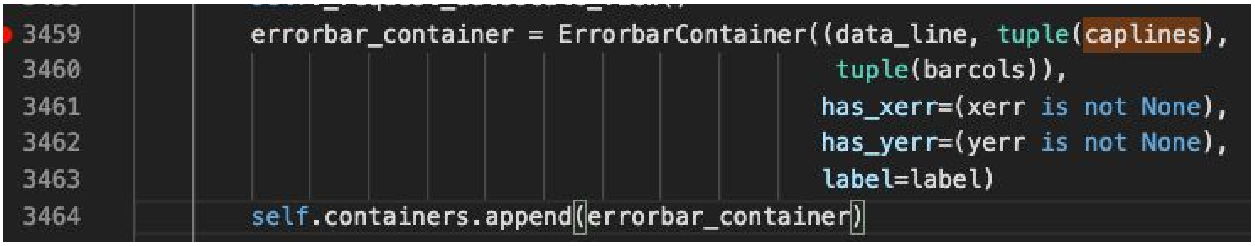
```
        if plotnonfinite and colors is None:
            c = np.ma.masked_invalid(c)
            x, y, s, edgecolors, linewidths = \
                cbook._combine_masks(x, y, s, edgecolors, linewidths)
        else:
            x, y, s, c, colors, edgecolors, linewidths = \
                cbook._combine_masks(
                    x, y, s, c, colors, edgecolors, linewidths)
```



```

        offsets = np.ma.column_stack([x, y])

        collection = mcoll.PathCollection(
                (path,), scales,
                facecolors=colors,
                edgecolors=edgecolors,
                linewidths=linewidths,
                offsets=offsets,
                transOffset=kwargs.pop('transform', self.transData),
                alpha=alpha
                )
```

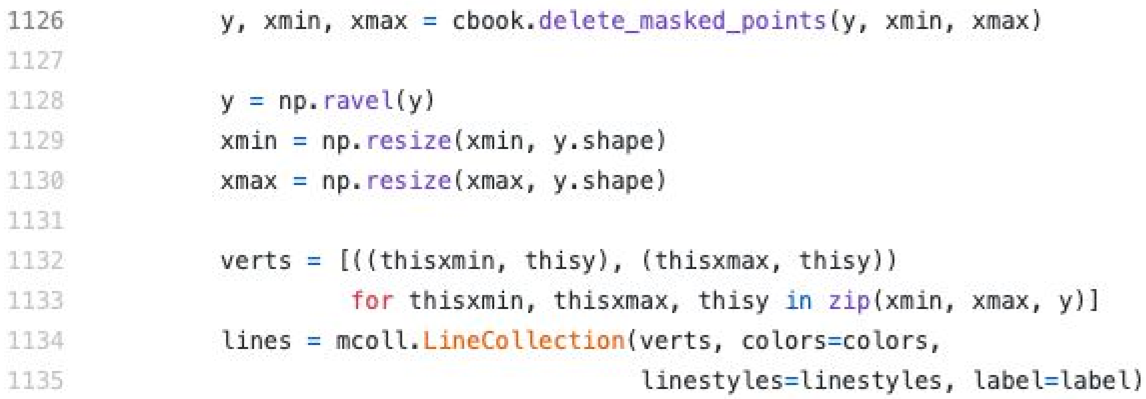
The snapshot of the Scatter object shows an if statements to determine if plot nonfinite point(Bad point or invalid point) or not and pass the points as MaskedArray object to PathCollection.

ErrorBar object



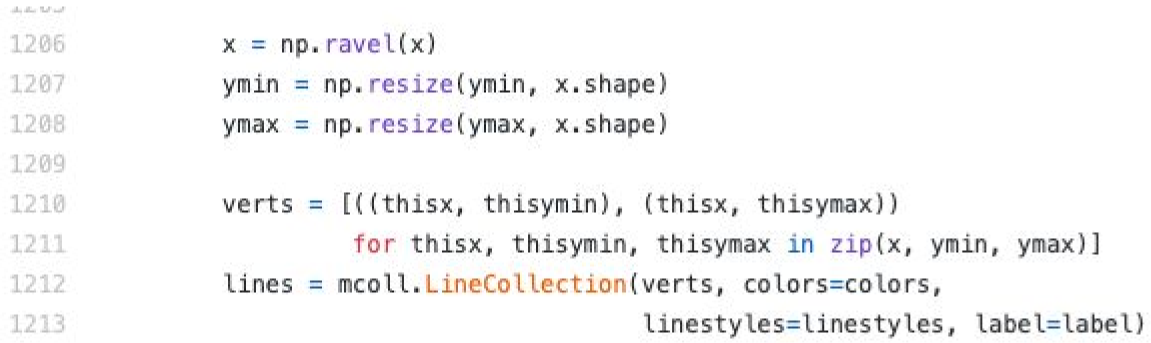
```
        errorbar_container = ErrorbarContainer((data_line, tuple(caplines),
                                                 tuple(barcols)),
                                                has_xerr=(xerr is not None),
                                                has_yerr=(yerr is not None),
                                                label=label)
        self.containers.append(errorbar_container)
```

Hlines



```
        y, xmin, xmax = cbook.delete_masked_points(y, xmin, xmax)

        y = np.ravel(y)
        xmin = np.resize(xmin, y.shape)
        xmax = np.resize(xmax, y.shape)

        verts = [((thisxmin, thisy), (thisxmax, thisy))
                 for thisxmin, thisxmax, thisy in zip(xmin, xmax, y)]
        lines = mcoll.LineCollection(verts, colors=colors,
                                     linestyles=linestyles, label=label)
```

Vlines



```
        x = np.ravel(x)
        ymin = np.resize(ymin, x.shape)
        ymax = np.resize(ymax, x.shape)

        verts = [((thisx, thisymin), (thisx, thisymax))
                 for thisx, thisymin, thisymax in zip(x, ymin, ymax)]
        lines = mcoll.LineCollection(verts, colors=colors,
                                     linestyles=linestyles, label=label)
```

The reason why we select this bug
First of all, this bug is not easy or too hard. This bug requires a large amount of understanding of the basic process in matplotlib. We have to figure out how the Nan value is drawed or passed between different objects. Second, the bug has been confirmed with Matplotlib, that Errorbar is not supposed to ignore the invalid point and shift the colour to the next valid point. Furthermore, there is only one team working on this bug, but the submitted PR was rejected due to incorrect implementation and no further update since March 2019.

Implementation

Tests

Setting a thetalim > 2pi gives odd results · Issue #16501 · matplotlib/matplotlib - Dennis

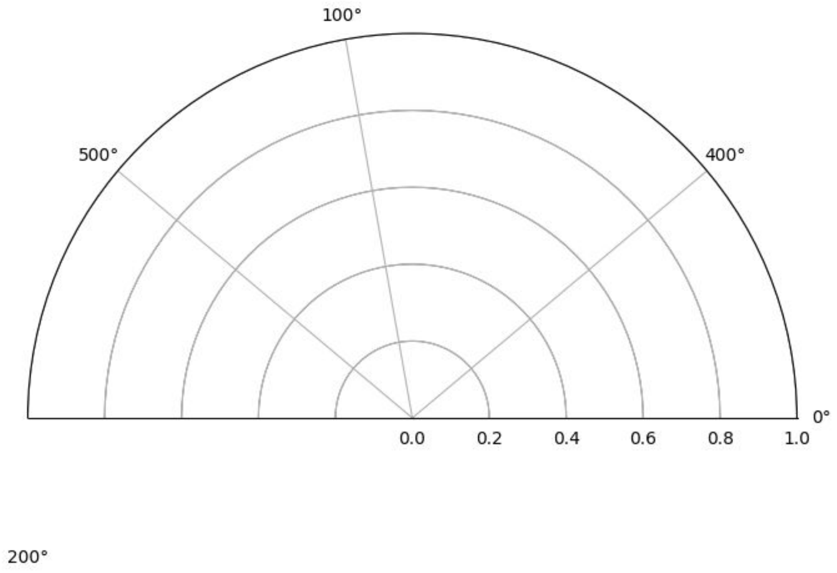
Bug Description

When plotting a graph using a polar projection (polar coordinate system) and modifying the viewing bounds of the PolarAxes with set_thetalim, out of bounds values are not being handled properly and produce an undesirable figure instead (see Result).

Code for reproduction

```
import numpy as np
import matplotlib.pyplot as plt

ax = plt.subplot(111, projection='polar')
ax.set_thetalim(0, 3 * np.pi)
plt.show()
```

Result



Estimated Effort

Resolving this issue would first require an understanding of the desired behaviour. In theory, there are many solutions to this problem, including:

- Displaying an error message to the user for exceeding the boundary range of 2π for a polar coordinate graph
- Using modulo to interpret and scale the input values to be within the boundary range [with a warning message]

Depending on the desired behaviour, the issue can take between 1-6 hours to resolve, with the lower bound of the estimate representing a simple solution to the issue (such as throwing an error message for illegal arguments), and the upper bound of the estimate corresponding to a more complex solution involving multiple classes (ie. PolarAxes, Scale).