

## **Quick start**

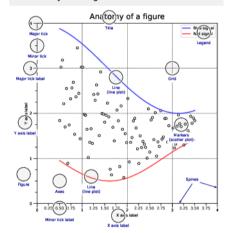
import numpy as np import matplotlib as mpl import matplotlib.pyplot as plt

X = np.linspace(0, 2\*np.pi, 100)Y = np.cos(X)

fig, ax = plt.subplots() ax.plot(X, Y, color='green')

fig.savefig("figure.pdf") plt.show()

## Anatomy of a figure



## Subplots layout



# Getting help

matplotlib.org

github.com/matplotlib/matplotlib/issues

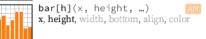
discourse.matplotlib.org

stackoverflow.com/questions/tagged/matplotlib https://gitter.im/matplotlib/matplotlib

**y** twitter.com/matplotlib



scatter(X, Y, ...) X, Y, [slizes, [clolors, marker, cmap









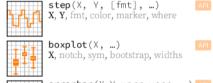


quiver([X], [Y], U, V, ...) API

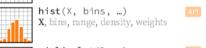




## Advanced plots





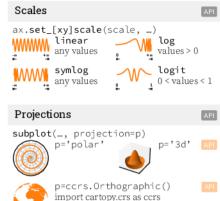




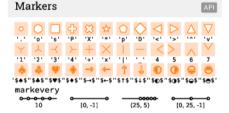














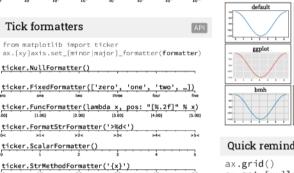




twilight



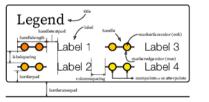
Tick locators



#### Ornaments

ticker.PercentFormatter(xmax=5)

ax.legend(...) handles, labels, loc, title, frameon





0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9





## Event handling

fig, ax = plt.subplots() def on\_click(event): print(event) fig.canvas.mpl\_connect( 'button\_press\_event', on\_click)

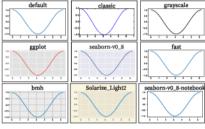
## Animation

import matplotlib.animation as mpla

```
T = np.linspace(0, 2*np.pi, 100)
S = np.sin(T)
line, = plt.plot(T, S)
def animate(i):
    line.set_ydata(np.sin(T+i/50))
anim = mpla.FuncAnimation(
    plt.gcf(), animate, interval=5)
plt.show()
```

## Styles

plt.stvle.use(style)



### Quick reminder

```
ax.set_[xy]lim(vmin, vmax)
ax.set_[xy]label(label)
ax.set_[xy]ticks(ticks, [labels])
ax.set_[xy]ticklabels(labels)
ax.set_title(title)
ax.tick_params(width=10, ...)
ax.set_axis_[on|off]()
fig.suptitle(title)
fig.tight_layout()
plt.gcf(), plt.gca()
mpl.rc('axes', linewidth=1, ...)
```

# Keyboard shortcuts



[fig|ax].patch.set\_alpha(0)

text=r'\$\frac{-e^{i\pi}}{2^n}\$'

## Ten simple rules

1. Know your audience

2. Identify your message

3. Adapt the figure

4. Captions are not optional

5. Do not trust the defaults

6. Use color effectively

7. Do not mislead the reader

8. Avoid "chartiunk"

9. Message trumps beauty 10. Get the right tool