



Smith Charts in Python

How to make Smith Charts with plotly.

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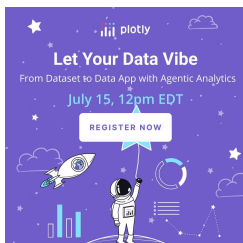
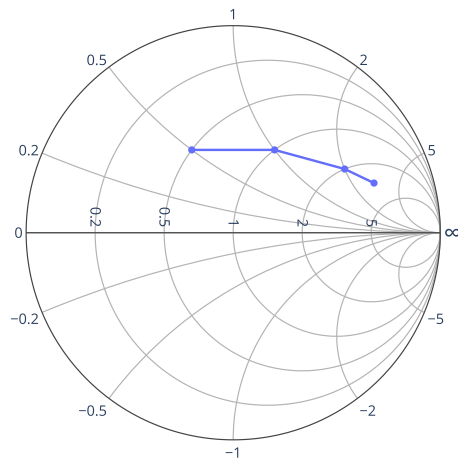
New in v5.4

A [Smith Chart](https://en.wikipedia.org/wiki/Smith_chart) (https://en.wikipedia.org/wiki/Smith_chart) is a specialized chart for visualizing [complex numbers](https://en.wikipedia.org/wiki/Complex_number) (https://en.wikipedia.org/wiki/Complex_number): numbers with both a real and imaginary part.

Smith Charts with Plotly Graph Objects

```
import plotly.graph_objects as go

fig = go.Figure(go.Scattersmith(imag=[0.5, 1, 2, 3], real=[0.5, 1, 2, 3]))
fig.show()
```



Smith Chart Subplots and Styling

```
import plotly.graph_objects as go

fig = go.Figure()

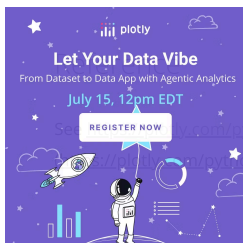
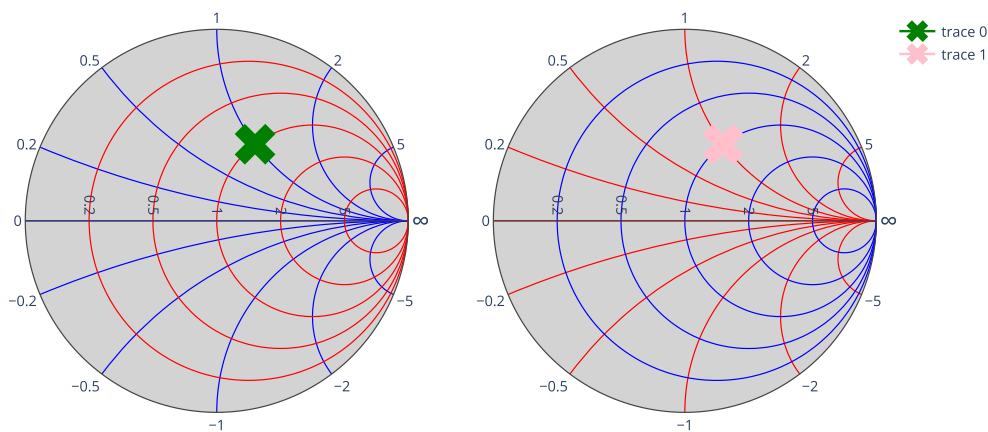
fig.add_trace(go.Scattersmith(
    imag=[1],
    real=[1],
    marker_symbol='x',
    marker_size=30,
    marker_color="green",
    subplot="smith1"
))

fig.add_trace(go.Scattersmith(
    imag=[1],
    real=[1],
    marker_symbol='x',
    marker_size=30,
    marker_color="pink",
    subplot="smith2"
))

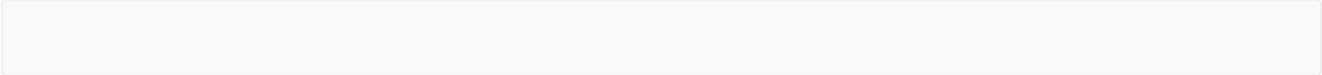
fig.update_layout(
    smith=dict(
        realaxis_gridcolor='red',
        imaginaryaxis_gridcolor='blue',
        domain=dict(x=[0,0.45])
    ),
    smith2=dict(
        realaxis_gridcolor='blue',
        imaginaryaxis_gridcolor='red',
        domain=dict(x=[0.55,1])
    )
)

fig.update_smiths(bgcolor="lightgrey")

fig.show()
```



python/reference/scattersmith/ (<https://plotly.com/python/reference/scattersmith/>) and <https://plotly.com/python/reference/layout/smith/> for more information and chart attribute options!



What About Dash?

Dash (<https://dash.plot.ly/>) is an open-source framework for building analytical applications, with no Javascript required, and it is tightly integrated with the Plotly graphing library.

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Learn about how to install Dash at <https://dash.plot.ly/installation> (<https://dash.plot.ly/installation>).

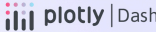
Everywhere in this page that you see fig.show(), you can display the same figure in a Dash application by passing it to the figure argument of the [Graph component](https://dash.plot.ly/dash-core-components/graph) (<https://dash.plot.ly/dash-core-components/graph>) from the built-in dash_core_components package like this:

```
import plotly.graph_objects as go # or plotly.express as px
fig = go.Figure() # or any Plotly Express function e.g. px.bar(...)
# fig.add_trace( ... )
# fig.update_layout( ... )

from dash import Dash, dcc, html

app = Dash()
app.layout = html.Div([
    dcc.Graph(figure=fig)
])

app.run(debug=True, use_reloader=False) # Turn off reloader if inside Jupyter
```



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☐ pop

☒ lifeExp

☐ gdpPerCap

country	pop	continent	lifeExp	gdpPerCap
Afghanistan	33889923	Asia	43.828	976.5883384
Albania	2606023	Europe	76.423	5927.629120999999
Algeria	3333226	Africa	72.361	6223.267465
Angola	22326476	Africa	42.731	4797.211267
Argentina	40301927	Americas	75.32	12779.37964
Australia	20434176	Oceania	81.235	34435.367639999995
Austria	8199783	Europe	79.829	46106.4927
Bahrain	708673	Asia	75.635	29796.44634
Bangladesh	150448339	Asia	64.862	1391.253792
Belgium	10392226	Europe	79.441	33892.48598
Benin	8078314	Africa	56.728	1441.284873
Bolivia	9139152	Americas	65.354	3822.137884

avg of lifeExp



continent

(https://dash.plotly.com/tutorial?utm_medium=graphing_libraries&utm_content=python_footer)

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