Phys105-Week00-Student

October 10, 2020

1 First CoCalc Notebook

This Week00 Notebook is just to check that you are able to access material in CoCalc and contact a demonstrator.

Run the cell below by selecting it (click in the cell) and then either pressing the ▶ symbol in the menu bar above, or pressing and holding down *Ctrl* then pressing *Enter*.

```python
[ ]: # <!-- Student -->
import datetime
now = datetime.datetime.now()
print("Date and time ",str(now))
#
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
#
max_iterations = 32
x_min, x_max = -2.5, 1.5
y_min, y_max = -1.5, 1.5
ds = 0.008
nX = int((x_max - x_min)/ds)
nY = int((y_max - y_min)/ds)
X = np.linspace(x_min, x_max, nX)
Y = np.linspace(y_min, y_max, nY)
data = np.zeros((nX, nY), dtype = 'uint8')
for i in range(0, nX):
    for j in range(0, nY):
        x0, y0 = X[i], Y[j]
        x, y = x0, y0
        count = 0
        while count < max_iterations:
            x, y = (x0 + x*x - y*y, y0 + 2*x*y)
            if x*x + y*y > 4.0:
                break
            count += 1
        data[i, j] = max_iterations - count
    #
```

```python
fig, ax = plt.subplots(figsize = (20, 15))
plt.tight_layout()
ax.imshow(data.transpose(), interpolation = 'nearest', cmap = 'jet')
plt.axis('off')
plt.show()
#
then = now
now = datetime.datetime.now()
print(" ")
print("Date and time",str(now))
print("Time since last check is",str(now - then))
```

Show the result to one of the online demonstrators.

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