Dynamicos

March 16, 2023

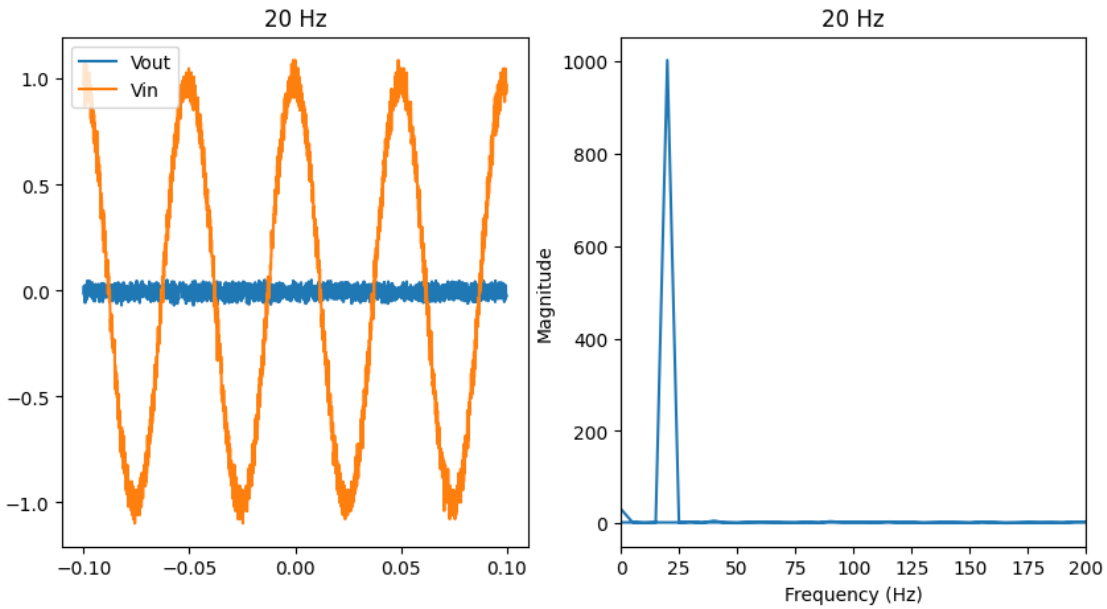
[62]:
```
import pandas as pd
import os
import matplotlib.pyplot as plt
```

[63]:
```
current_working_directory= os.getcwd()

files = os.listdir(current_working_directory)

DataFrames = {}


for file in files:
    if file[0]== 's':
        DataFrames[file.split('.')[0]]=pd.read_csv(file)
```

[70]:
```
#VARIABLES
scope11= DataFrames['scope_11']
seconds=scope11['second'].values
Volt1=scope11['Volt'].values
Volt2=scope11['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('20 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('20 Hz')
plt.xlabel('Frequency (Hz)')
```

```
plt.ylabel('Magnitude')
plt.xlim(0,200)
```

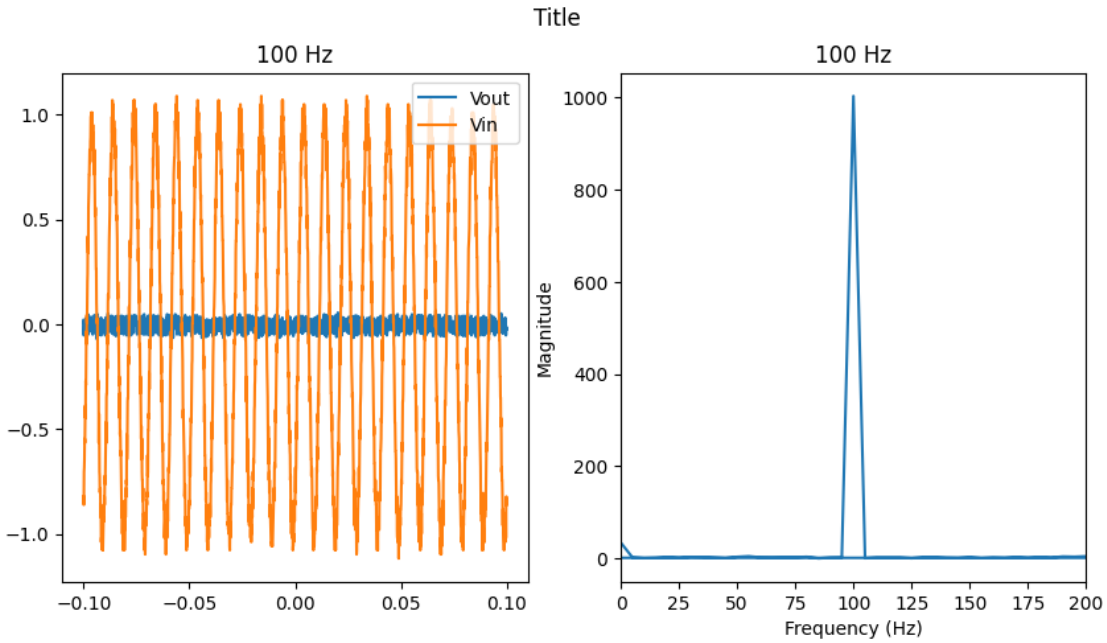
[70]: (0.0, 200.0)



[66]:
```
#VARIABLES
scope= DataFrames['scope_12']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('100 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('100 Hz')
plt.xlabel('Frequency (Hz)')
```

```
plt.ylabel('Magnitude')
plt.xlim(0,200)

fig.suptitle('Title')
```

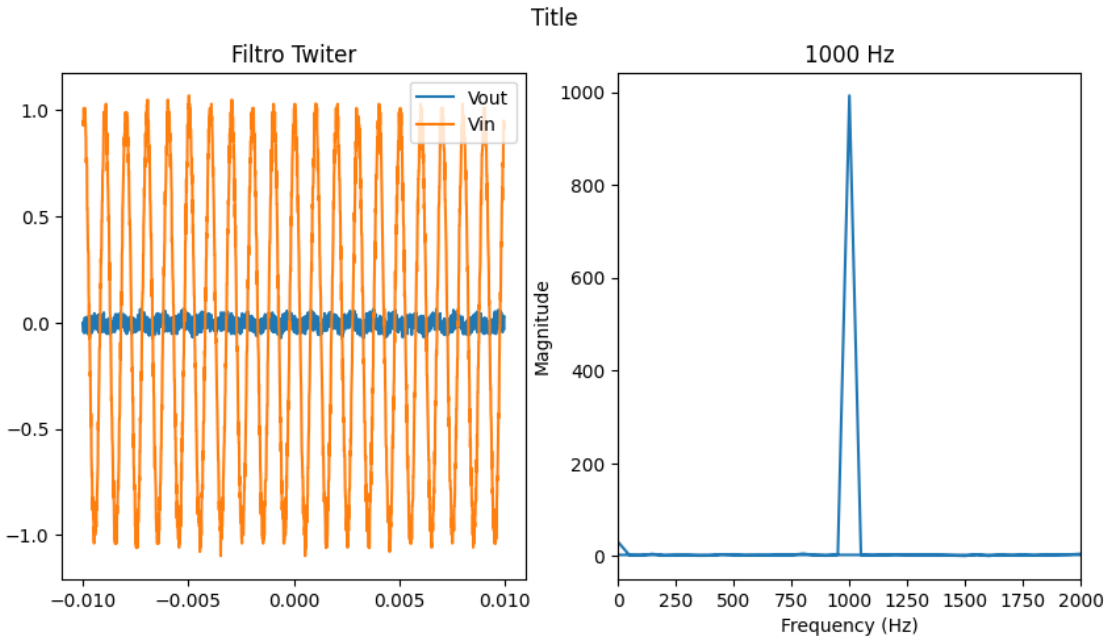
[66]: Text(0.5, 0.98, 'Title')



[32]:
```
#VARIABLES
scope= DataFrames['scope_13']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('1000 Hz')
axs[0].legend()
```

```
axs[1].plot(freqs, magnitude)
axs[1].set_title('1000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,2000)

fig.suptitle('Title')
```

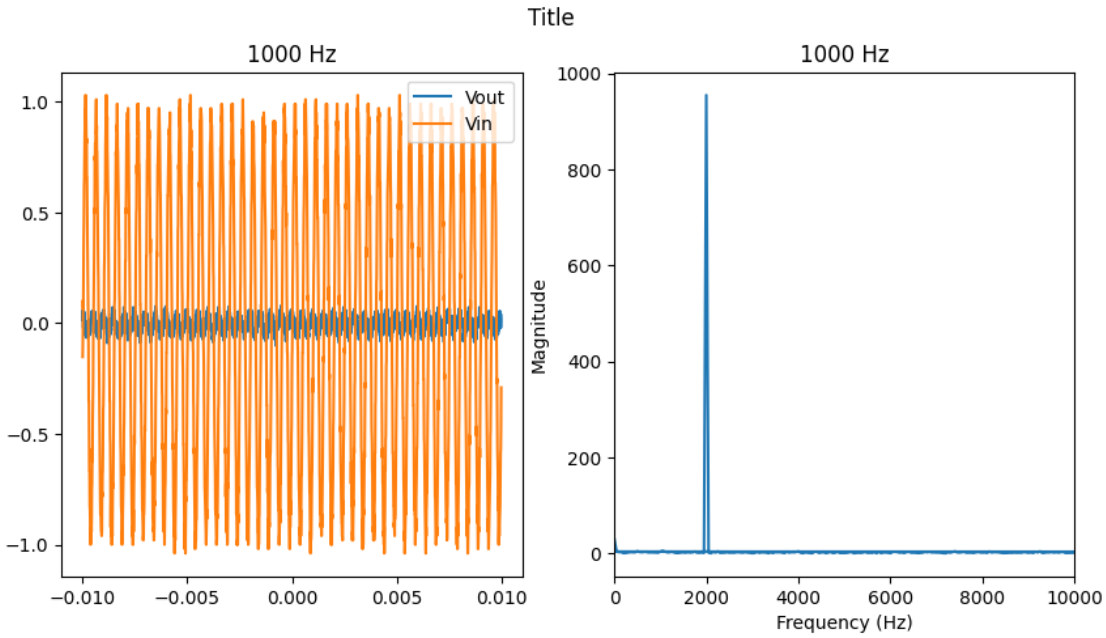
[32]: Text(0.5, 0.98, 'Title')



[36]:
```
#VARIABLES
scope= DataFrames['scope_14']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
```

```
axs[0].set_title('2000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('2000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,10000)

fig.suptitle('Title')
```

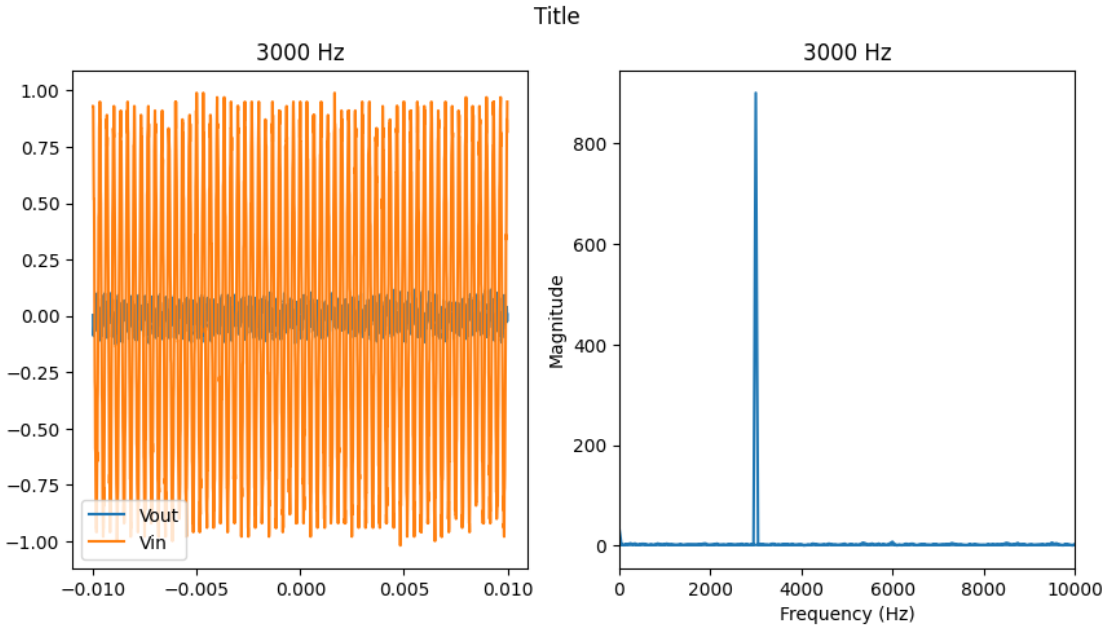
[36]: `Text(0.5, 0.98, 'Title')`



[38]:
```
#VARIABLES
scope= DataFrames['scope_15']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))
```

```
axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('3000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('3000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,10000)

fig.suptitle('Title')
```

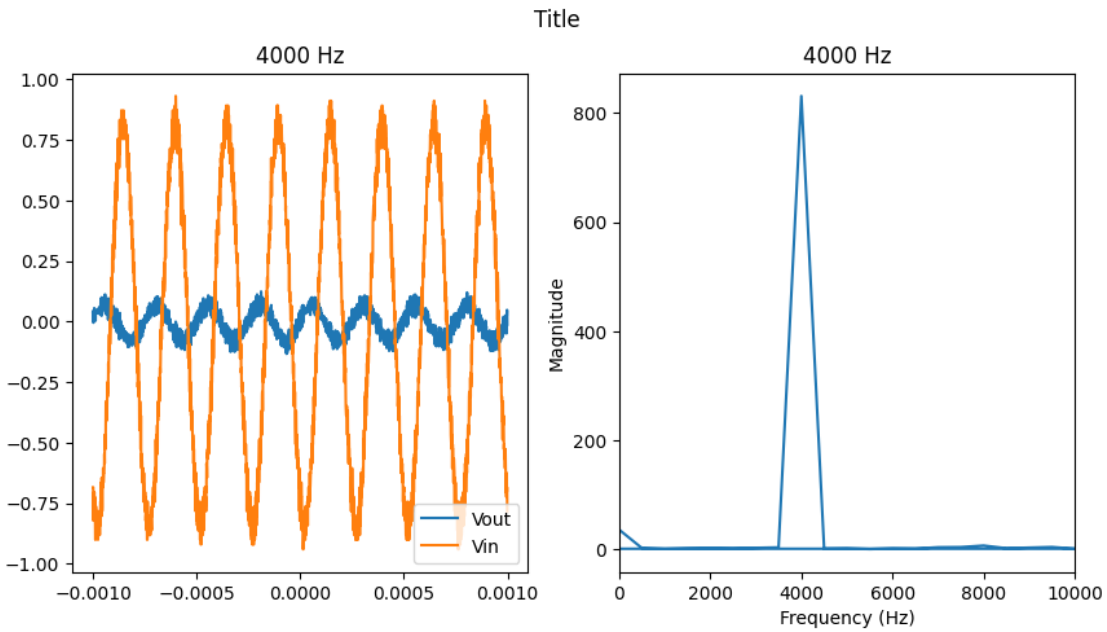
[38]: Text(0.5, 0.98, 'Title')



[40]:
```
#VARIABLES
scope= DataFrames['scope_16']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])
```

```
# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('4000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('4000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,10000)

fig.suptitle('Title')
```

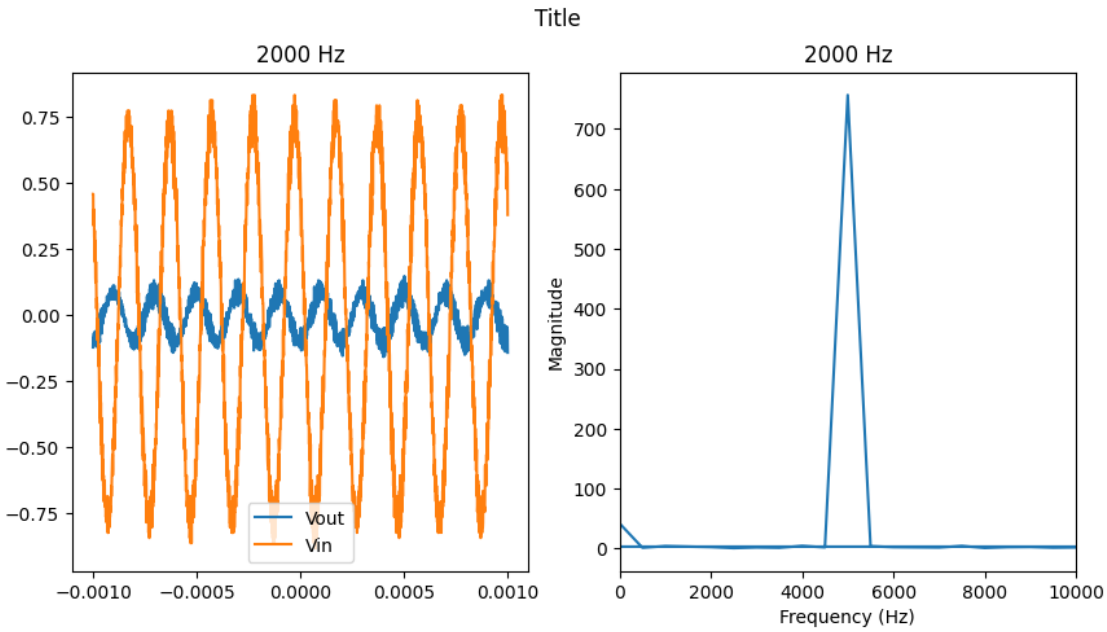
[40]: Text(0.5, 0.98, 'Title')



[41]:
```
#VARIABLES
scope= DataFrames['scope_17']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
```

```
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('5000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('5000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,10000)

fig.suptitle('Title')
```

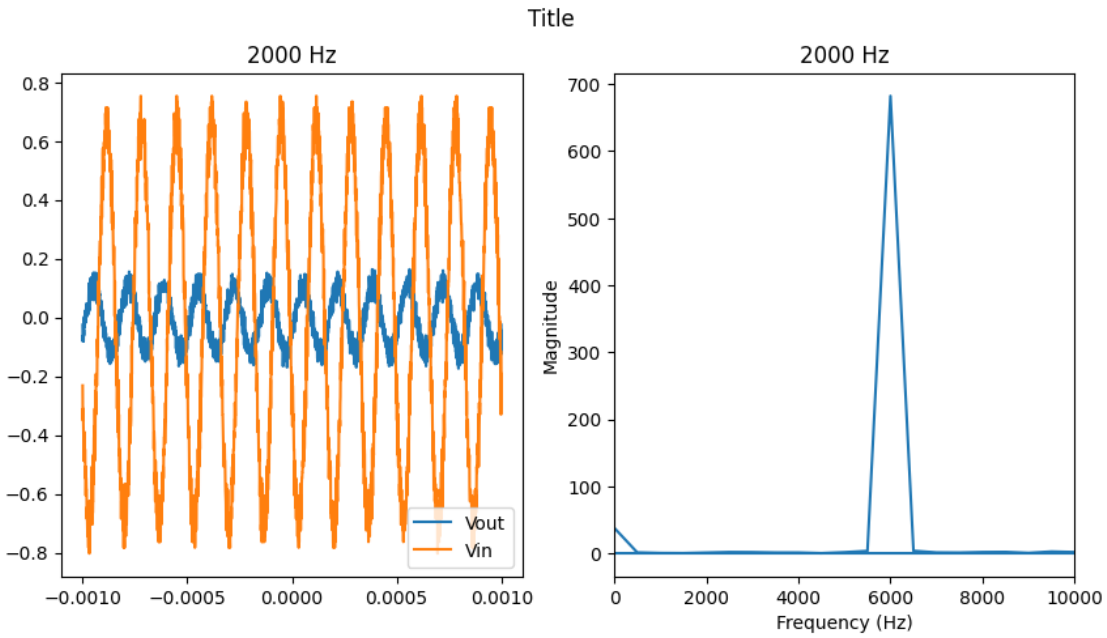
[41]: Text(0.5, 0.98, 'Title')



[42]:
```
#VARIABLES
scope= DataFrames['scope_18']
seconds=scope['second'].values
Volt1=scope['Volt'].values
```

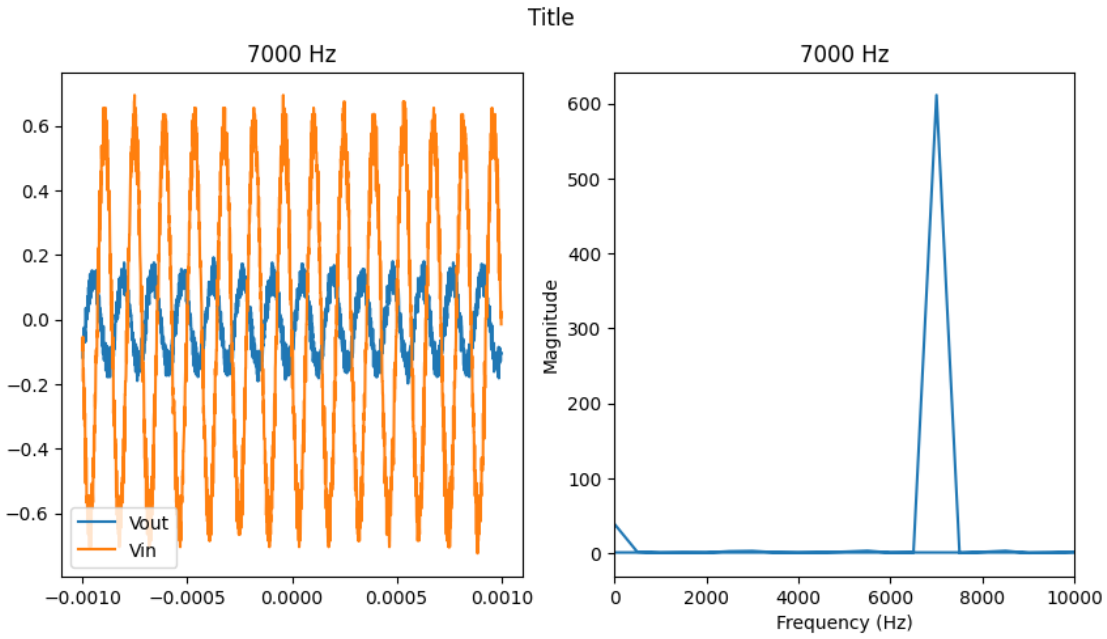
```
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('6000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('6000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,10000)

fig.suptitle('Title')
```

[42]: Text(0.5, 0.98, 'Title')



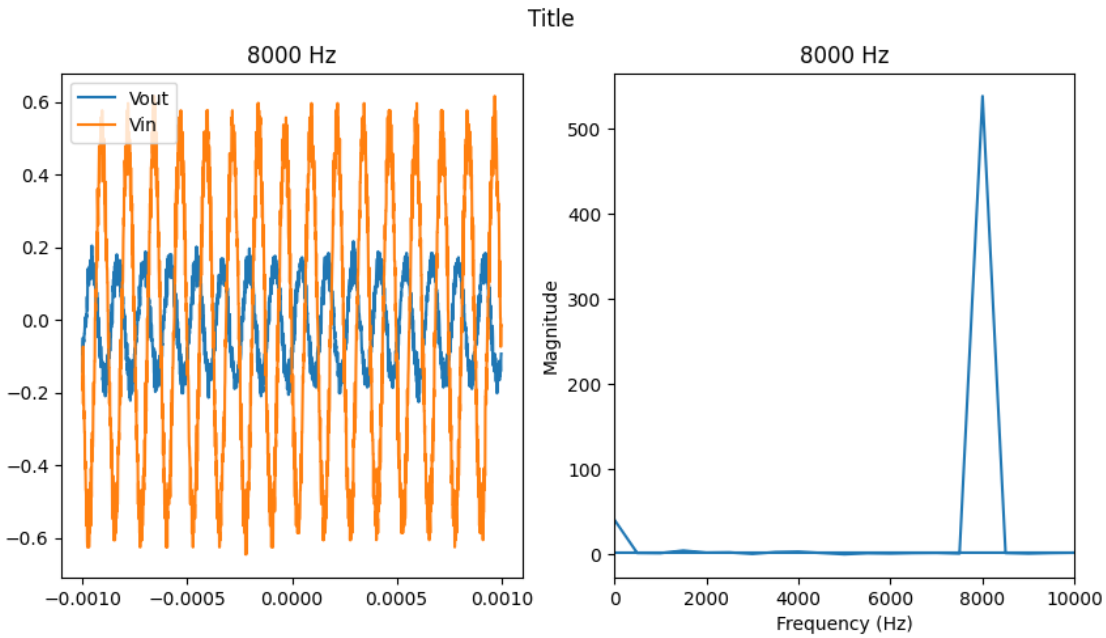
[44]:
```
#VARIABLES
scope= DataFrames['scope_19']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('7000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('7000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,10000)

fig.suptitle('Title')
```

[44]:
```
Text(0.5, 0.98, 'Title')
```



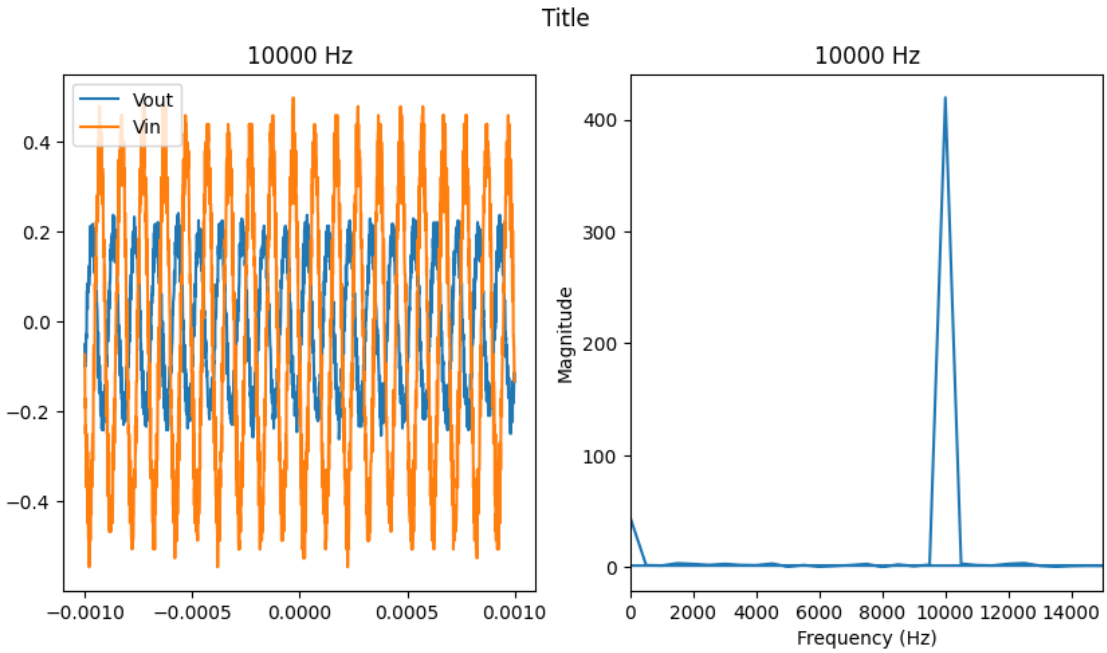
[46]:
```
#VARIABLES
scope= DataFrames['scope_20']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('8000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('8000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,10000)

fig.suptitle('Title')
```

[46]:
```
Text(0.5, 0.98, 'Title')
```



[48]:
```
#VARIABLES
scope= DataFrames['scope_21']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('10000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('10000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,15000)

fig.suptitle('Title')
```

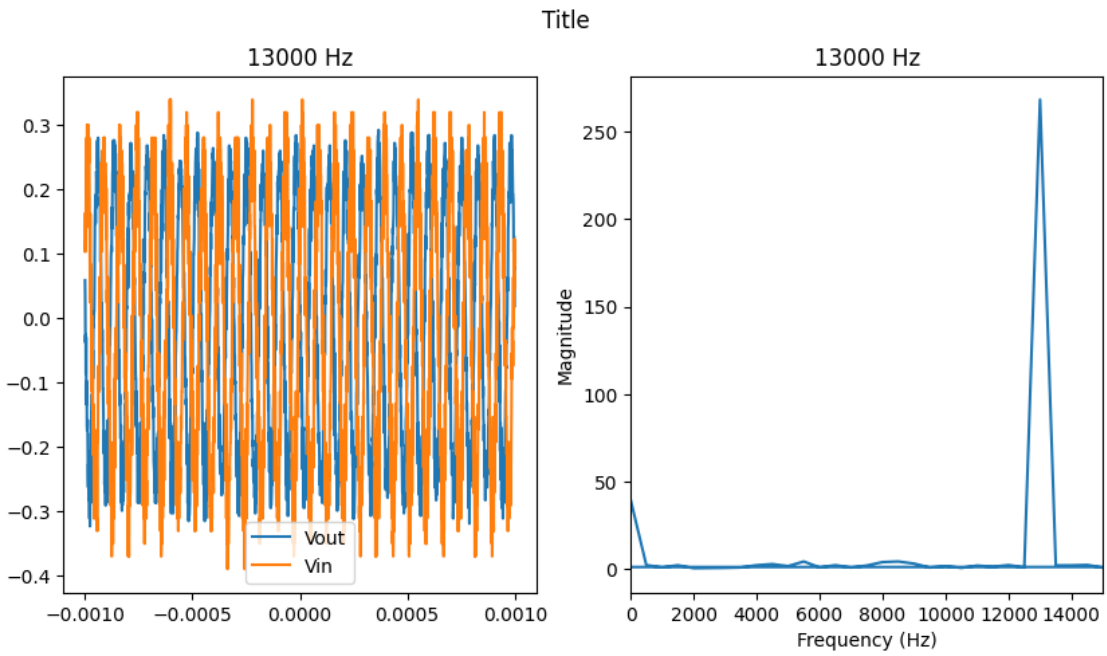
[48]: Text(0.5, 0.98, 'Title')



[53]:
```
#VARIABLES
scope= DataFrames['scope_22']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('13000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('13000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
```

```
plt.xlim(0,15000)

fig.suptitle('Title')
```

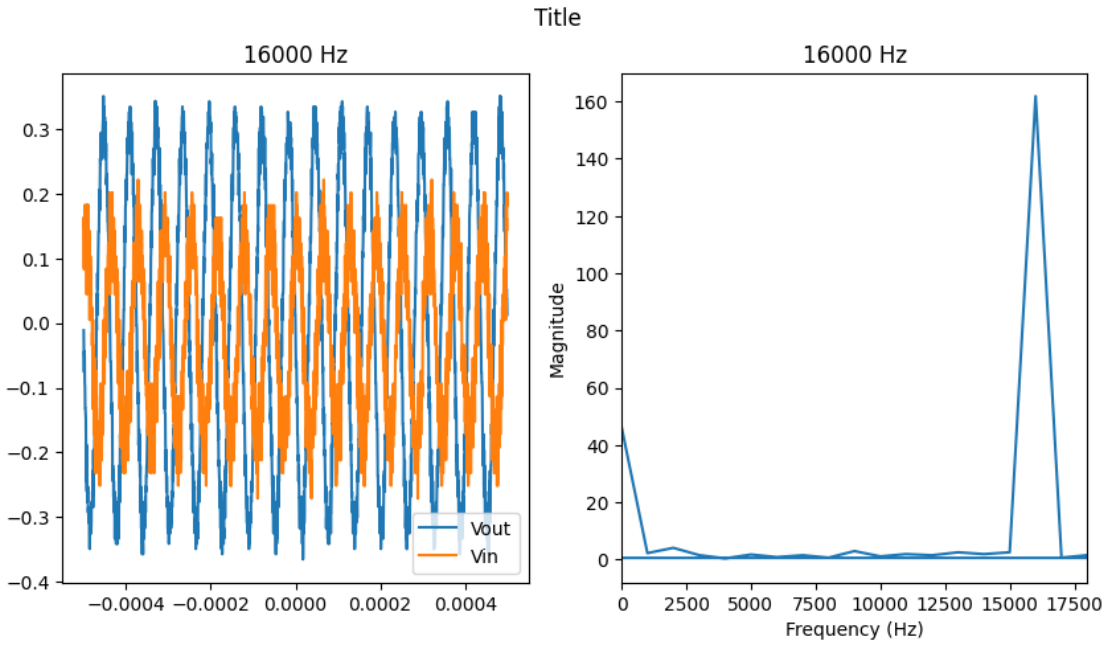
[53]: Text(0.5, 0.98, 'Title')



[57]:
```
#VARIABLES
scope= DataFrames['scope_23']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('16000 Hz')
axs[0].legend()
```

```
axs[1].plot(freqs, magnitude)
axs[1].set_title('16000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,18000)

fig.suptitle('Title')
```

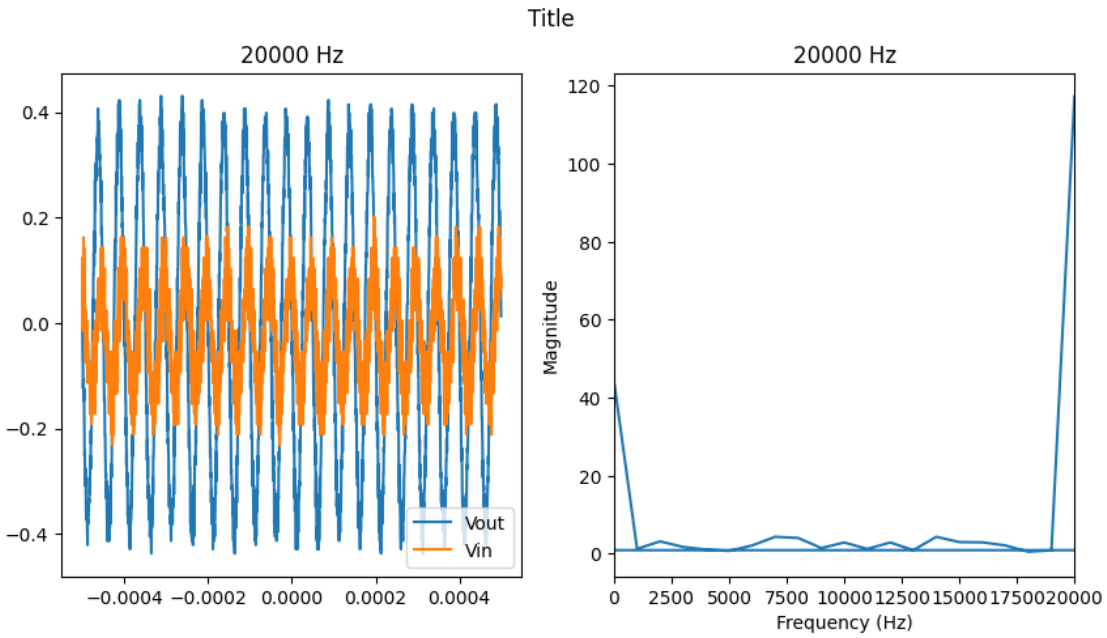
[57]:
```
Text(0.5, 0.98, 'Title')
```



[60]:
```
#VARIABLES
scope= DataFrames['scope_24']
seconds=scope['second'].values
Volt1=scope['Volt'].values
Volt2=scope['Volt.1'].values

#FFT
fft = np.fft.fft(Volt2)
magnitude = np.abs(fft)
freqs = np.fft.fftfreq(len(Volt2), seconds[1] - seconds[0])

# FIGURA
fig, axs = plt.subplots(1, 2, figsize=(10, 5))

axs[0].plot(seconds, Volt1, label='Vout')
```

```
axs[0].plot(seconds, Volt2, label='Vin')
axs[0].set_title('20000 Hz')
axs[0].legend()

axs[1].plot(freqs, magnitude)
axs[1].set_title('20000 Hz')
plt.xlabel('Frequency (Hz)')
plt.ylabel('Magnitude')
plt.xlim(0,20000)

fig.suptitle('Title')
```

[60]: Text(0.5, 0.98, 'Title')



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