

In []:

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

# all sums size
size = 100000
# phaser sum size
sum_size = 10
# generate all radom amplitudes and thetas we need
thetas = np.random.uniform(0, 2*np.pi, size*sum_size)
amps = np.random.uniform(0, 1, size*sum_size)

intensity = []
amplitude = []
for i in range(size):
    re = 0
    im = 0
    # get the phasor sum
    for j in range(sum_size):
        re += amps[i*sum_size+j]*np.cos(thetas[i*sum_size+j])
        im += amps[i*sum_size+j]*np.sin(thetas[i*sum_size+j])
    # add the phasor sums to the list
    intensity.append(re**2+im**2)
    amplitude.append(math.sqrt(re**2+im**2))

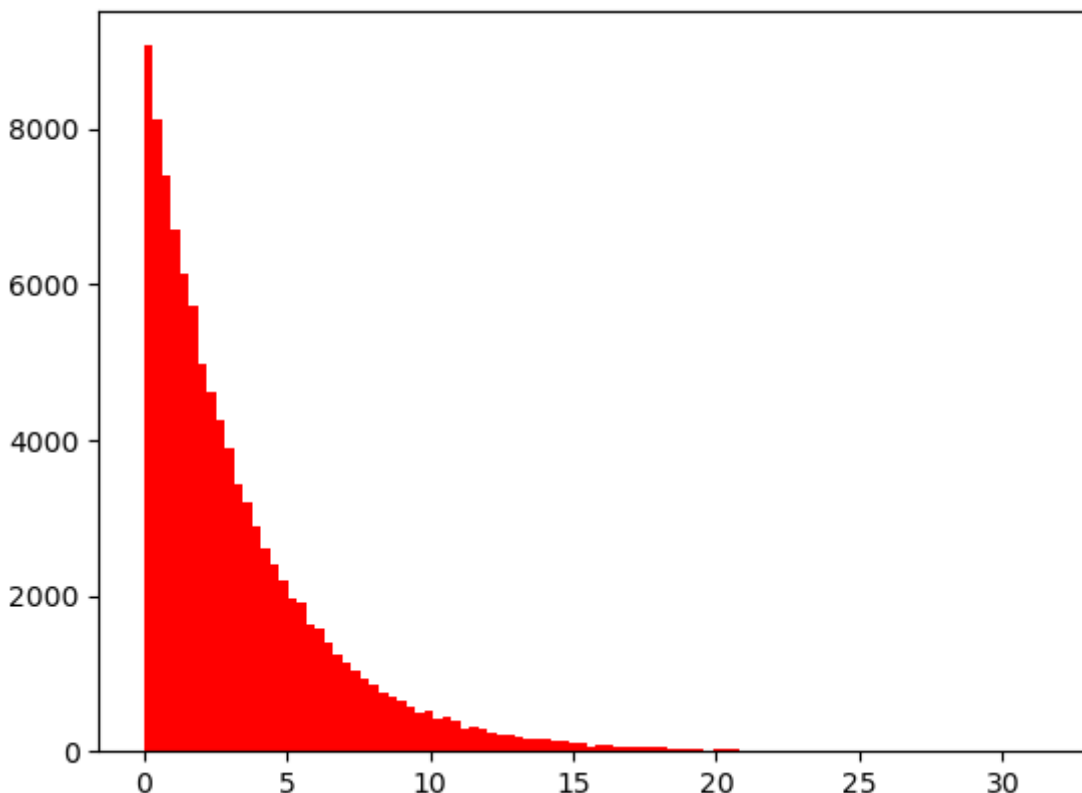
```

In [38]:

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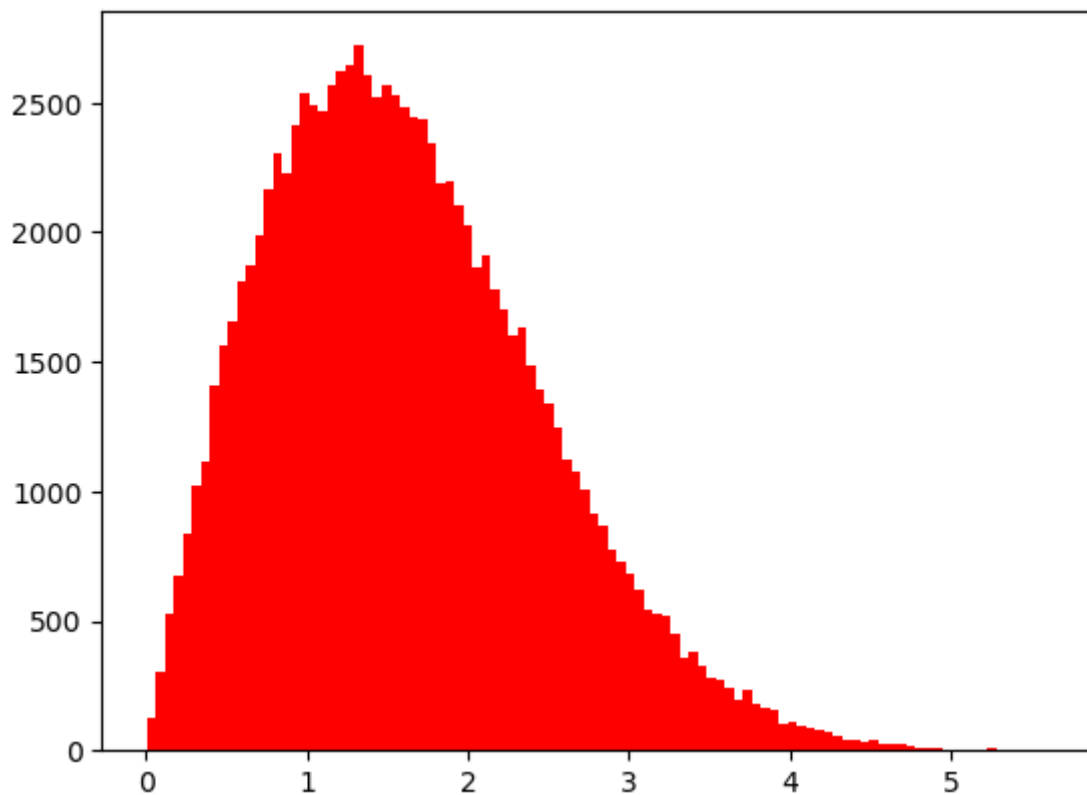
# draw the histogram of the intensity
plt.hist(intensity, bins = 100, color = "r")
plt.show()

```



In [39]:

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# draw the histogram of the amplitudes  
plt.hist(amplitude, bins = 100, color = "r")  
plt.show()
```



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