Gaussiana com rotação

Create a function that generates the image of a Gaussian optionally rotate by an angle \theta and with mx, my, sx, sy as input arguments.

In [1]:

```
#Imports
import numpy as np
import time
import matplotlib.pyplot as plt
%matplotlib inline
```

In [2]:

```
#Function
def generateGaussian(theta, mx, my, sx, sy):
    global X,Y

    #Rotation
    Xr = np.cos(theta)*X + np.sin(theta)*Y
    Yr = -np.sin(theta)*X + np.cos(theta)*Y
    X=Xr;
    Y=Yr;


    #Gaussian
    A = 20 #Amplitude
    x0= mx  # X's mean
    y0 = my # Y's mean
    Z = A * np.exp(-(((X-x0)**2/(2*(sx**2)))+((Y-y0)**2/(2*(sy**2)))))
    return Z
```

In [3]:

```
#Image constants
height = 100
width = 100
n = 100
x = np.linspace(-height//2, height//2, n)
y = np.linspace(-width//2, width//2,n)
X, Y = np.meshgrid(x,y)
```

In [4]:

```
Z = generateGaussian(np.pi/4, 0,0,15,10)
plt.imshow(Z, cmap = "gray")
plt.show()
```