HW5

Gavin DeBrun

1)

$$\frac{F_{JW}}{F_H} = \left(\frac{b_{JW}}{b_H}\right)^{.5} \cdot \left(\frac{D_H}{D_{JW}}\right)^2$$

$$-2.5log\left(\frac{F_{JW}}{F_H}\right) = -2.5log\left(\left(\frac{b_{JW}}{b_H}\right)^{.5} \cdot \left(\frac{D_H}{D_{JW}}\right)^{.5}\right)$$

$$m_{JW} - m_H = .5 - 5log\left(\frac{2.4}{6.5}\right) = 2.66$$

$$m_{JW} = 26 + 2.66$$

$$\boxed{m_{JW} = 28.66}$$

2)

```
In [ ]:  from astropy.io import fits
         import matplotlib.pyplot as plt
         import numpy as np
         g = fits.open('hw5-data/DESJ053816.9-503050.8_g.fits')
         i = fits.open('hw5-data/DESJ053816.9-503050.8_i.fits')
         r = fits.open('hw5-data/DESJ053816.9-503050.8_r.fits')
         spt = fits.open('hw5-data/SPT0538-50_fmap_220GHz.fits')
```

```
In [ ]:  spt_data = spt[0].data
         spt_std = np.std(spt_data)
         plt.imshow(spt_data)
         plt.show()
```
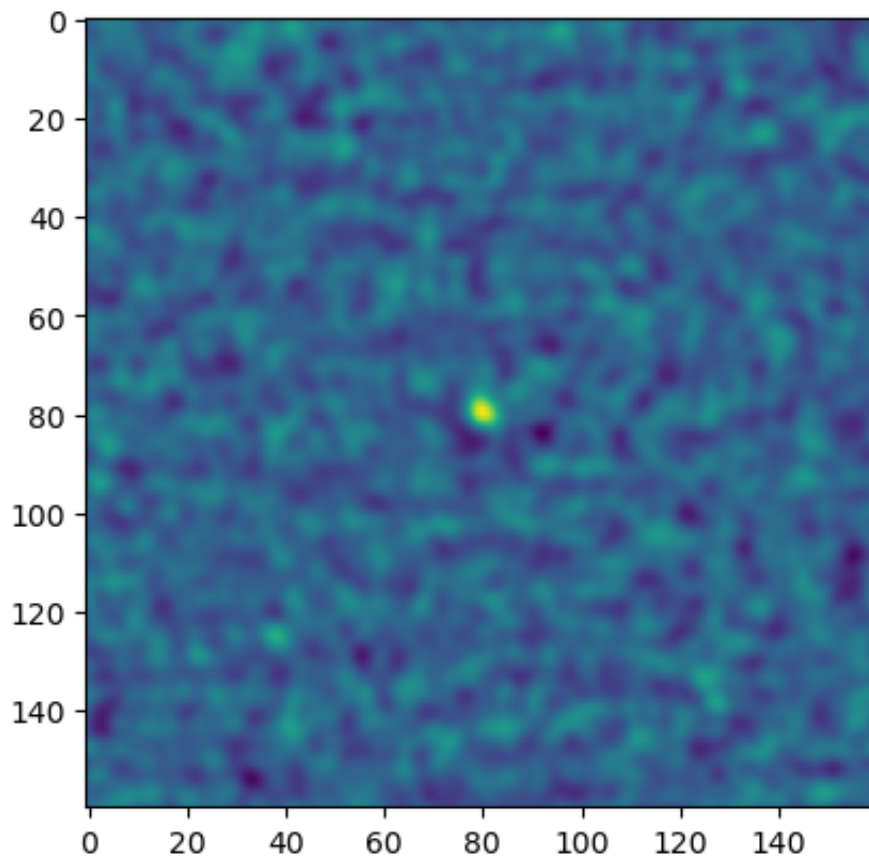
```
In [ ]:  print(3*spt_std)
         print(5*spt_std)
         print(7*spt_std)
         print(9*spt_std)
```

0.00023847800184739754
0.0003974633364123292
0.0005564486709772609
0.0007154340055421926