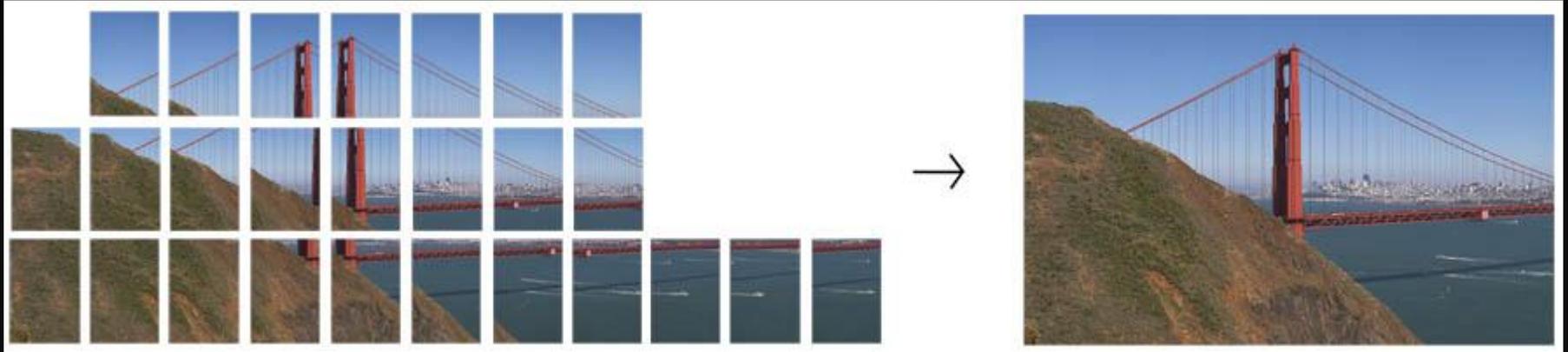


MKIDs

Microwave Kinetic Inductance Detector

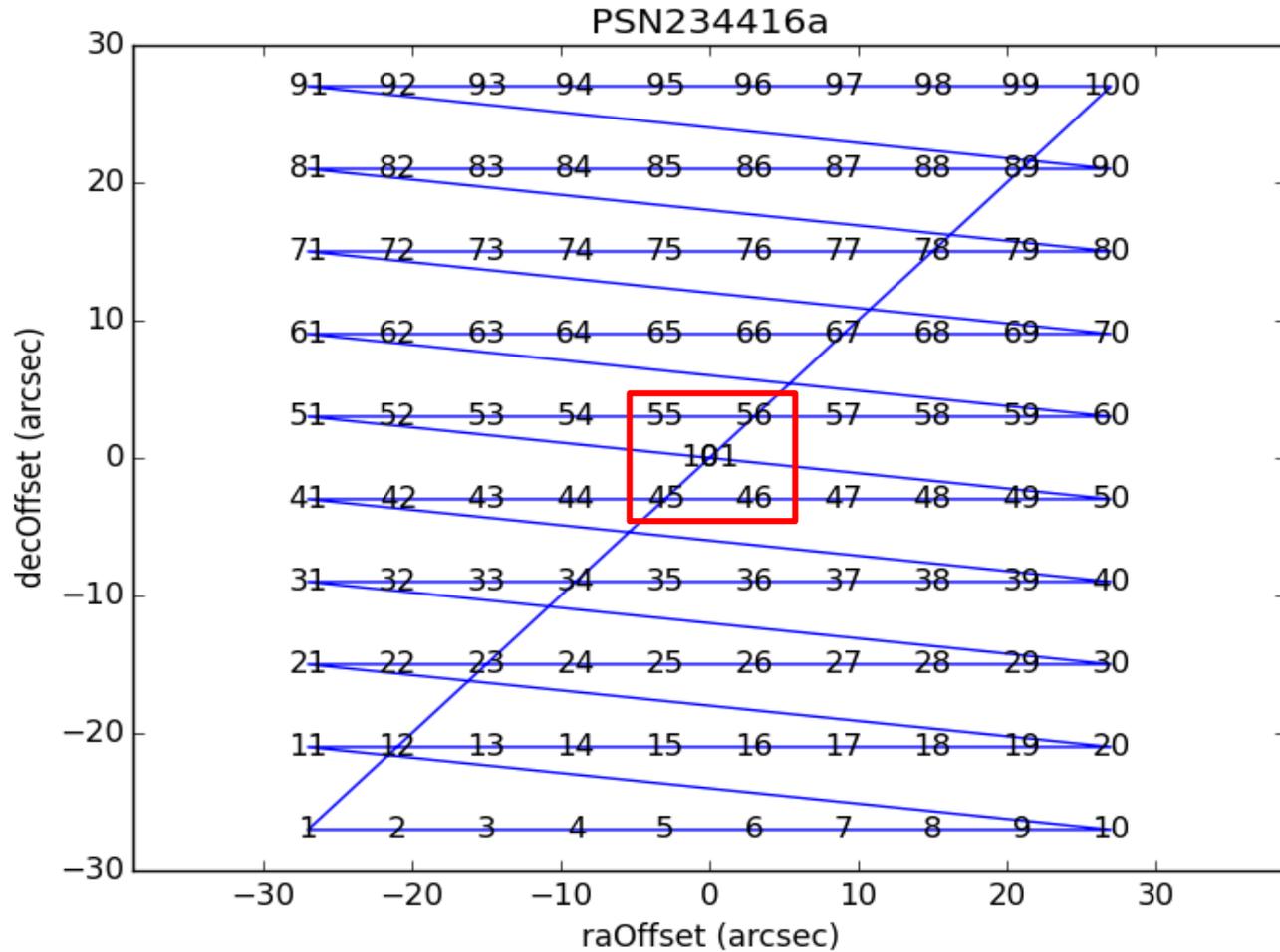
By Natalie Forsberg

Mosaic Data Collecting



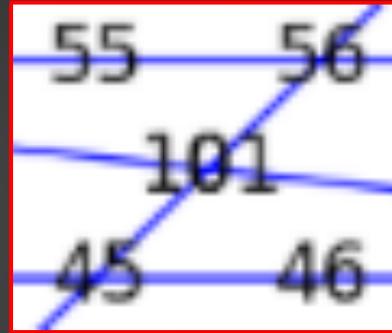
- Separate snapshots put together to make one picture
- Camera pointed in different directions
 - Have to make up for the camera “sagging”
 - take off time drift

Picture of Data



Information on the Data Picture

- Right ascension
 - East to West
- Declination
 - North to South
- Important numbers
 - 0, 45, 46, 55, 56, 101
 - blue lines = path of telescope
 - Use surrounding numbers' info to piece together the snapshots



Use Position of the Center Object

- Calculate RA Dec drift from first and last exposures
 - calculate camera rotation and degrees per pixel for each pair of snapshots
- Use the average to align all snapshots

Reference Star

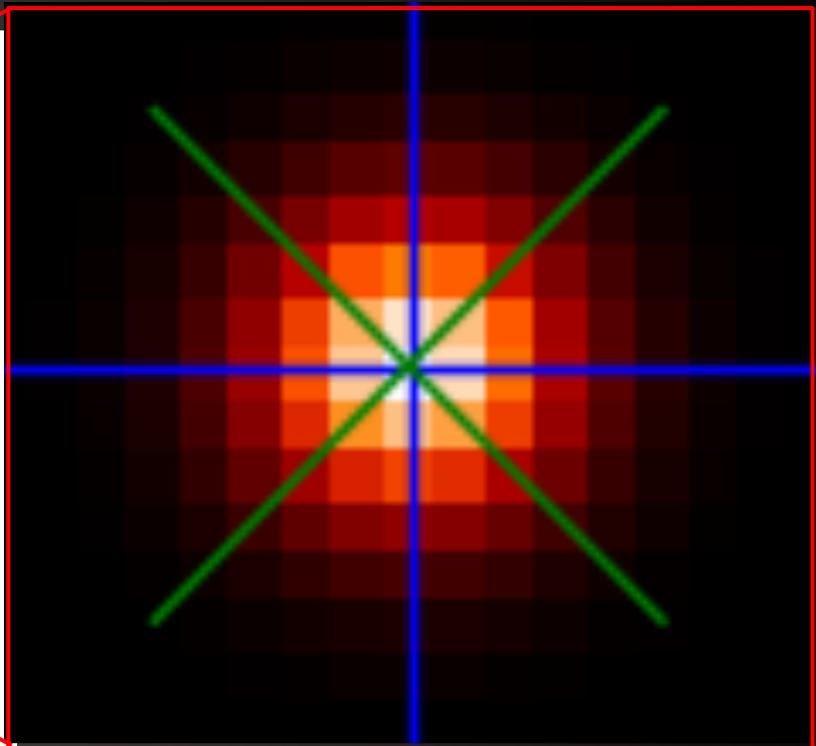
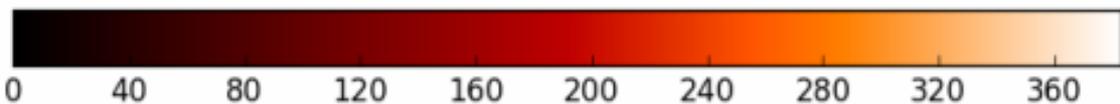
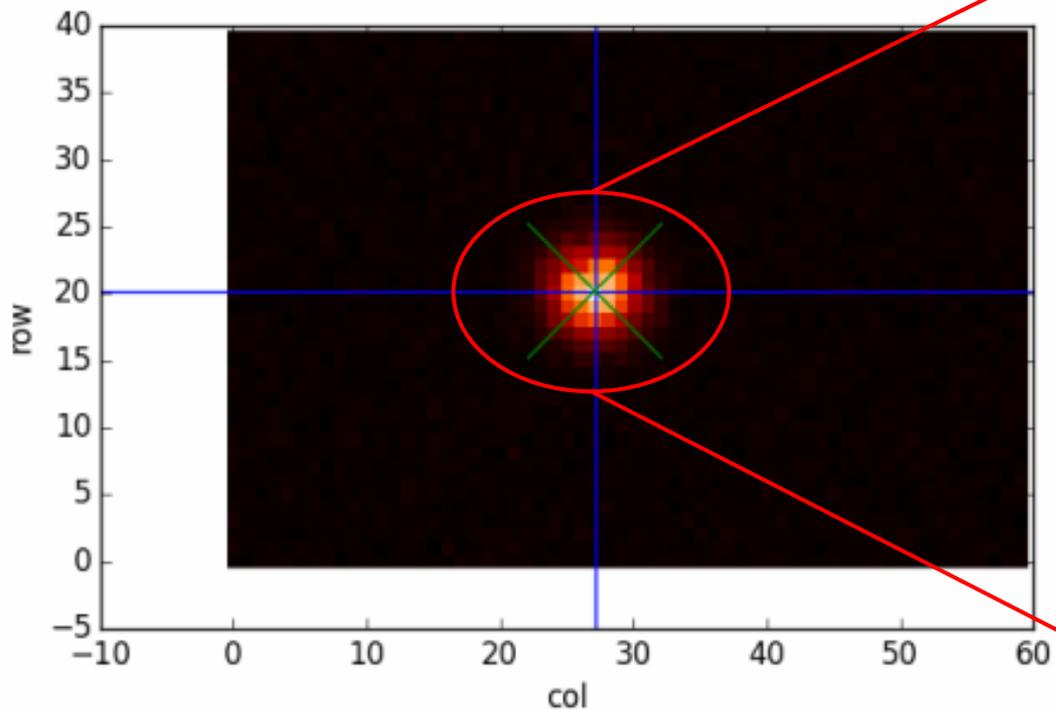
- Very important
 - Used to help put the mosaics together
- It is located within multiple mosaics
 - Allows us to combine the mosaics into one great pic



Centroid

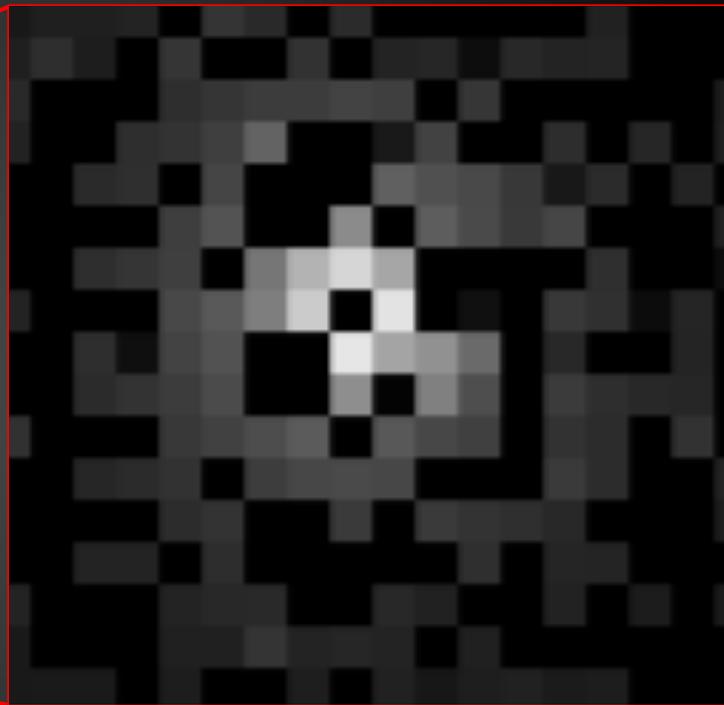
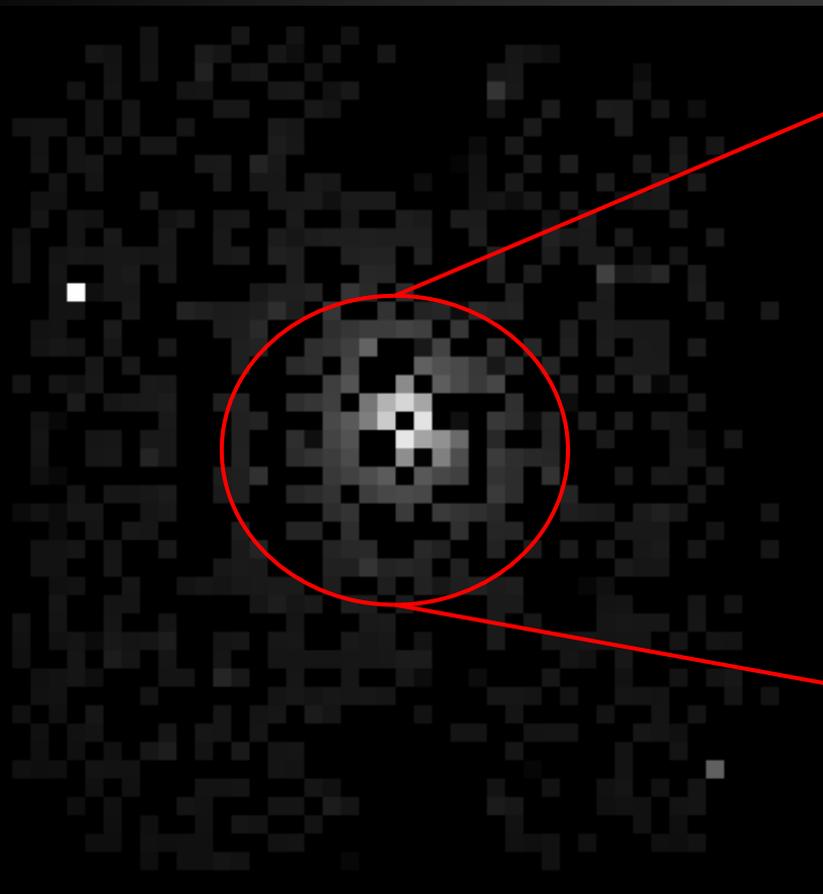
- Finds center of star
- It is a more accurate measurement
 - specifically the X and Y position of the object
- We “guess” where the object is
 - to the closest integer
 - then do a fit in order to get a better value
- What will we use it for?
 - to calculate the rotation angle and plate scale
 - more precision

Centroid Picture



Blue = Guessed position
Green = Real location

Raw Picture



What is TimeMask?

- It tells you what time a pixel went “crazy”
- Used to help to see pixels, and ignore the time when a pixel went bad
 - If we ignored every bad pixel altogether, then we would never see any pixels
- If a pixel shoots up
 - gets lots of photons
 - just that moment of time of the pixel is ignored

Before TimeMask



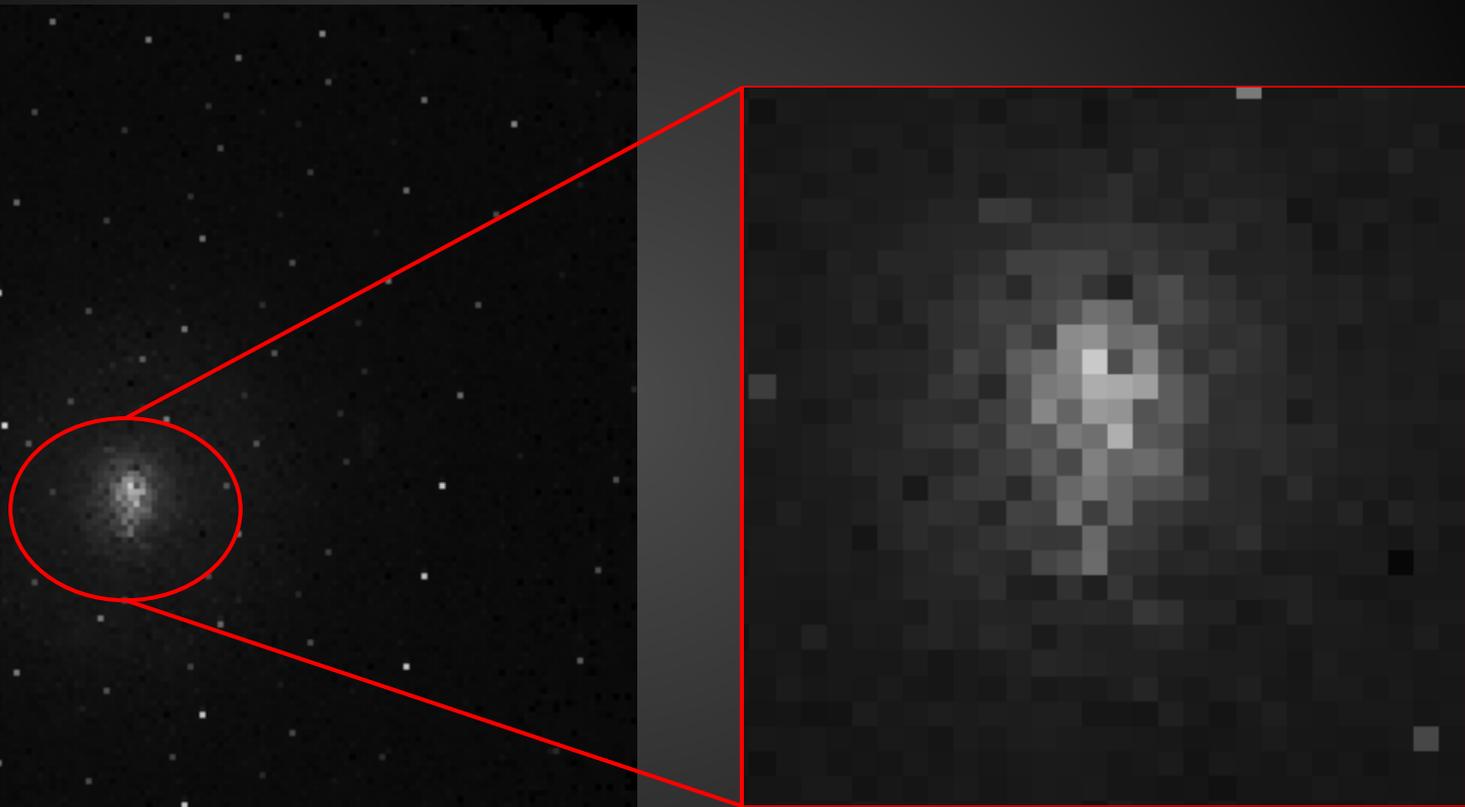
After TimeMask



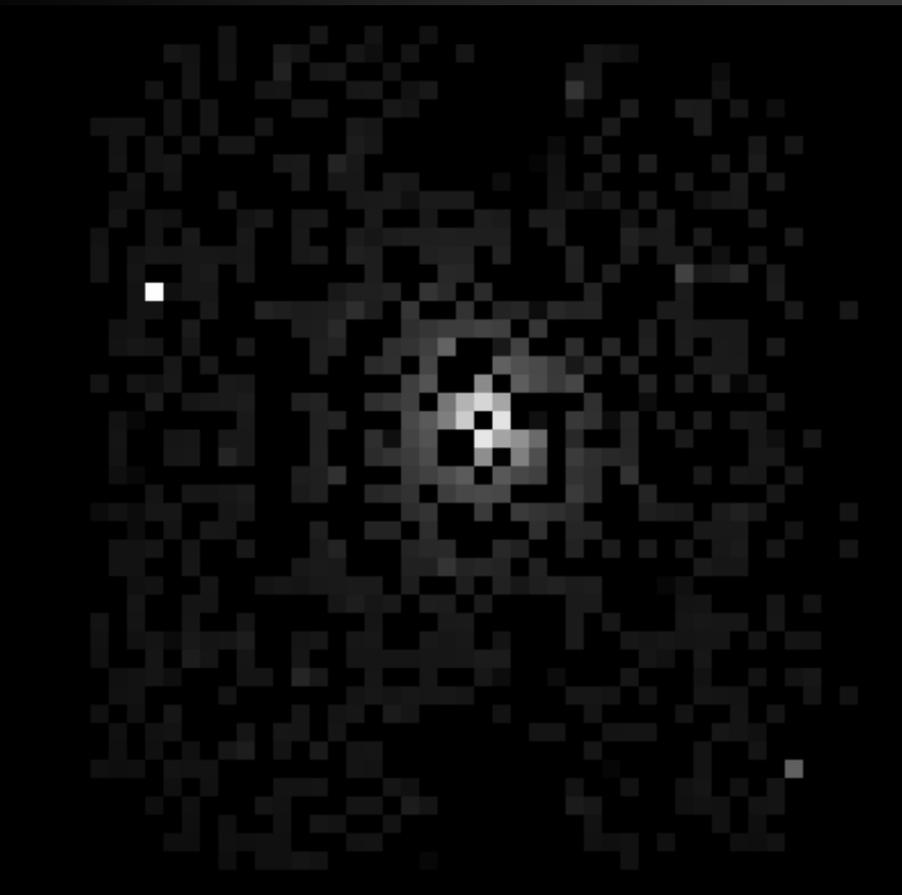
What is Interpolation?

- Almost like photoshop
 - Takes the bad pixels
 - “fixes” them
 - Takes the value of the bad pixel and replaces it
 - it does this by taking the average of the values of the surrounding pixels
 - then, it replaces the dead value with the new value

Interpolation Picture



Before Interpolation



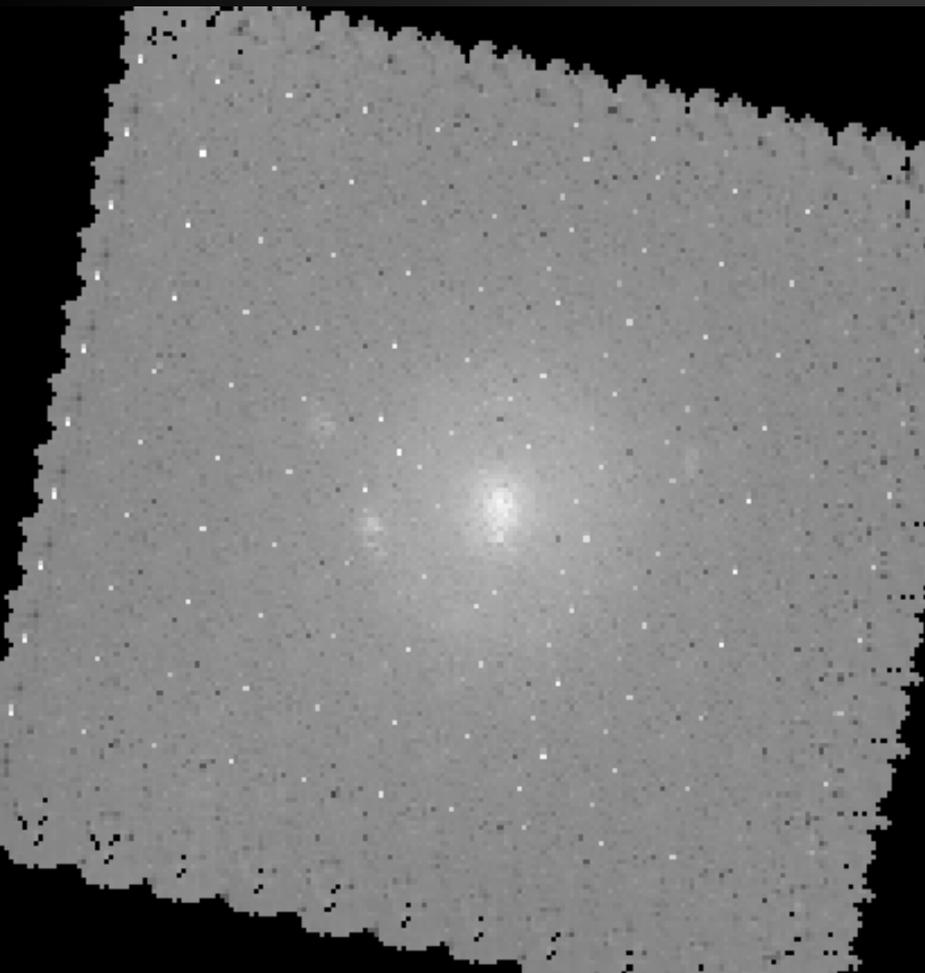
After Interpolation



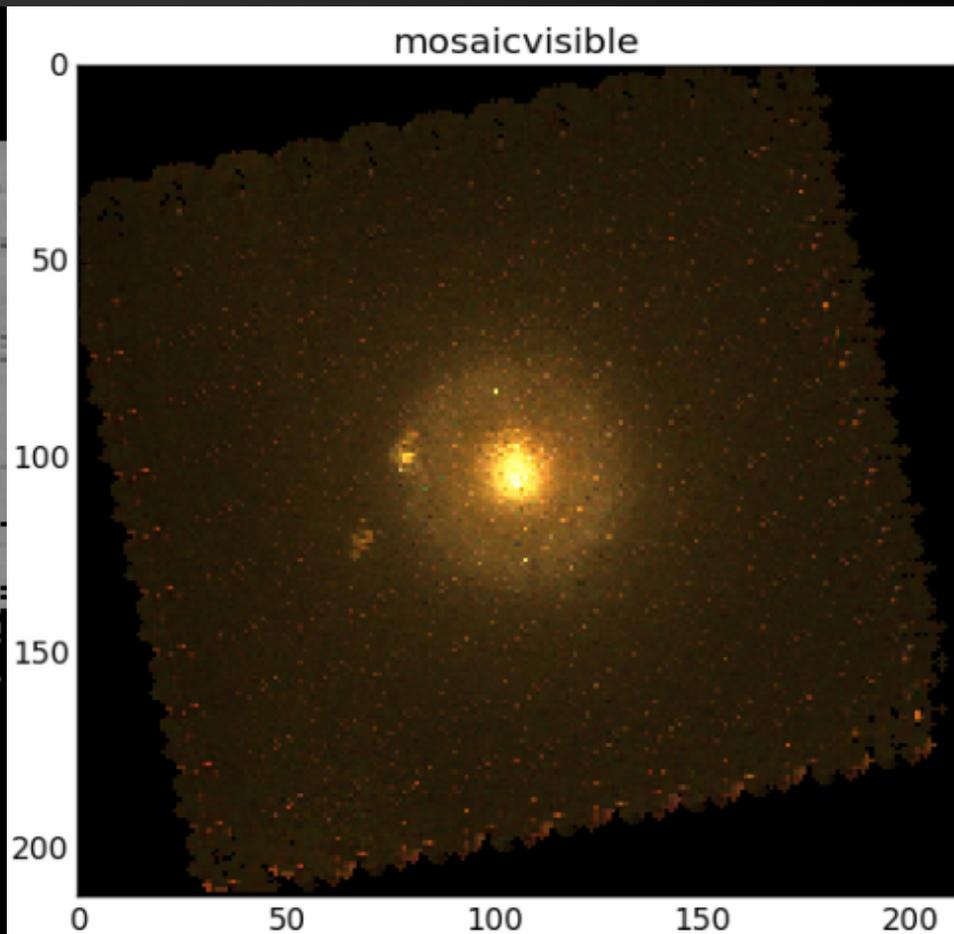
How the Pictures are Colored

- Don't Forget!
 - We have colored information
 - Key feature of MKIDs
- We figure out what color the photons are
 - Assign them different wavelengths
- Using George's program I have created...

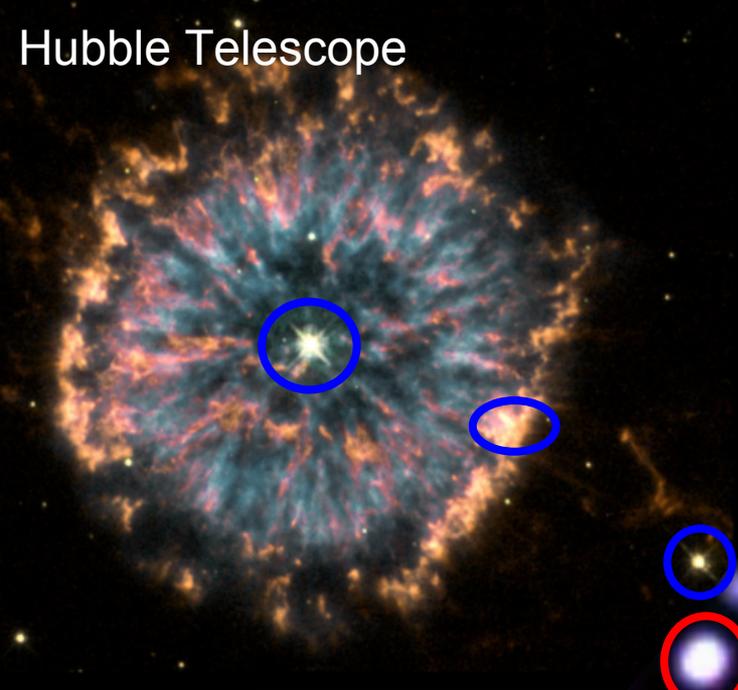
Before Color



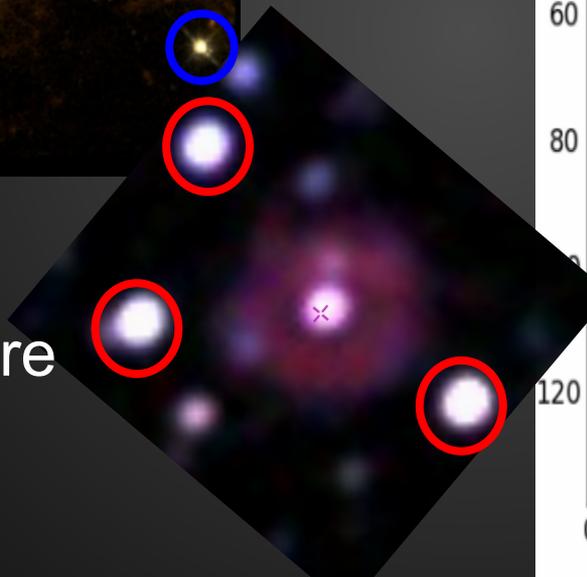
After Color



Hubble Telescope

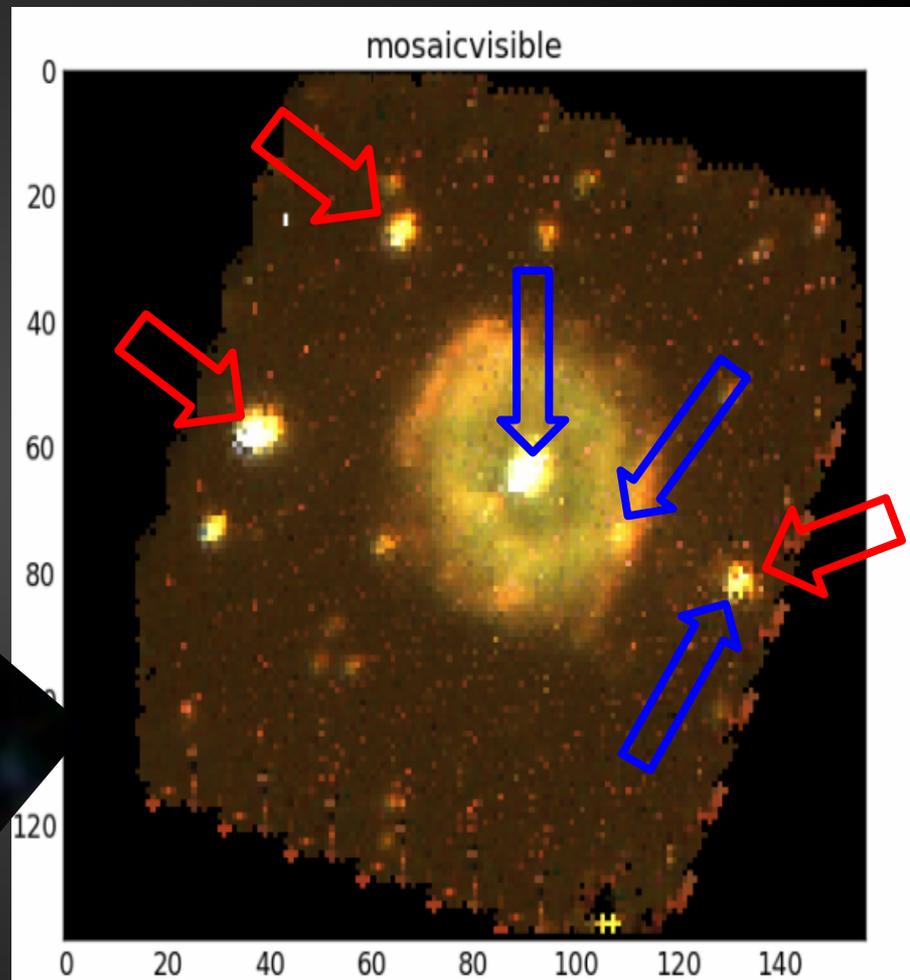


Infrared Picture

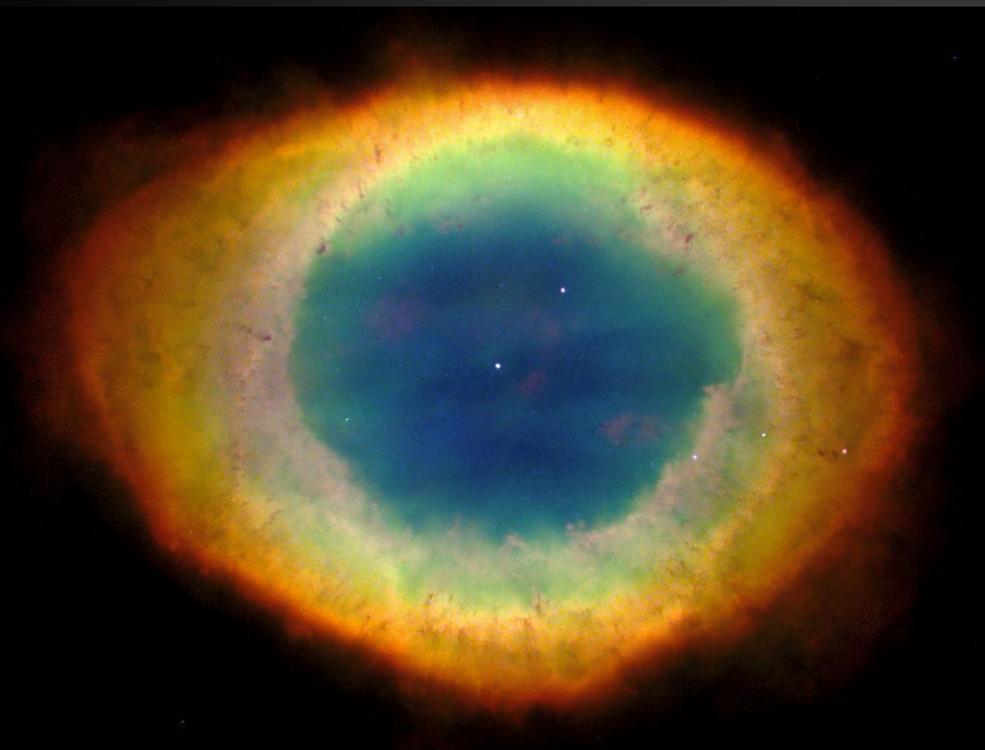


MKIDs Picture

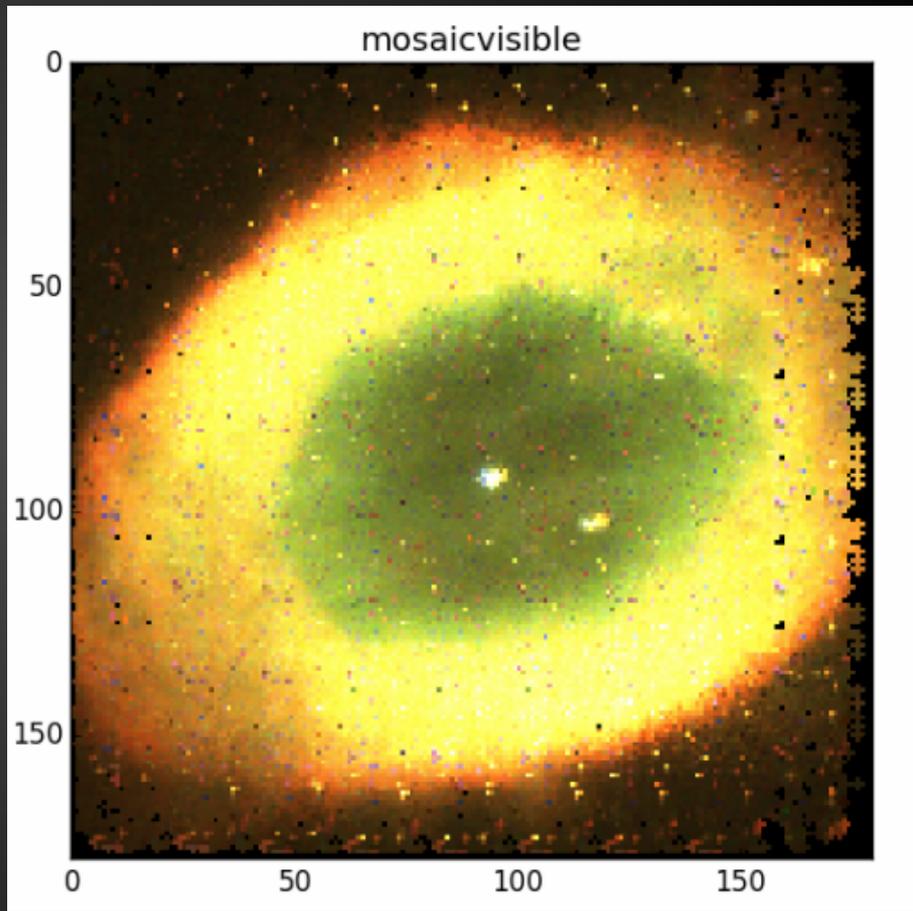
NGC6751



Hubble Telescope Pic



MKIDs Pic



Ring Nebula

THE END