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NASA JPL Images in Talks and Posters NITARP

- Many posters and talks will have astronomical images
- Some will be in color and some will be in black and white
- This is what you should know about those images:

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NASA JPL What is an Image NITARP

- There is nothing unique about an astronomical image
- All images on film or on an electronic detector are a recording of different brightnesses of light
- There is/has never been a color photograph. All present color images, whether taken by your digital camera or from Hubble, are a combination of several black and white images.
- So what is a black and white image?

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NASA JPL What is a Black and White Image NITARP

1.0	1.3	1.2	1.2	0.9
0.8	4.3	4.0	3.8	0.7
1.1	3.7	6	4.1	1.5
0.9	4.2	4.3	3.9	1.0
1.2	1.4	1.1	0.8	1.3

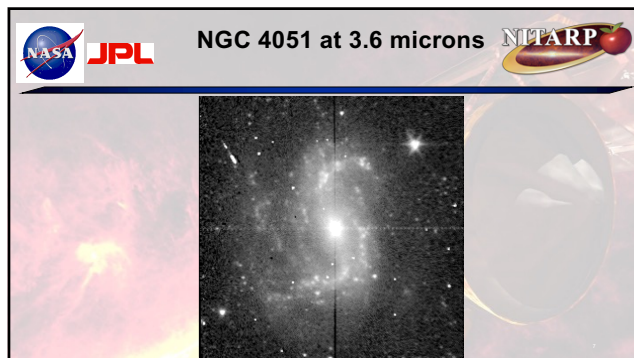
4

NASA JPL NGC 4051 at 3.6 microns NITARP

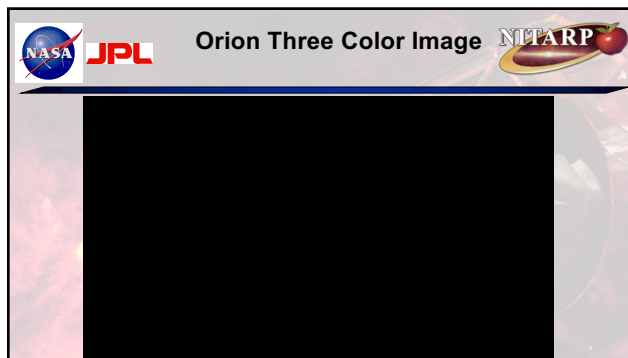
5

NASA JPL NGC 4051 at 3.6 microns NITARP

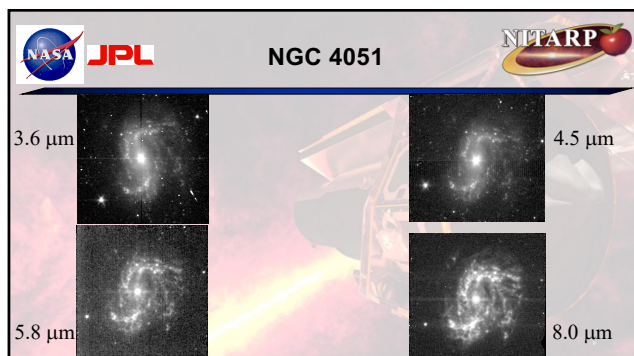
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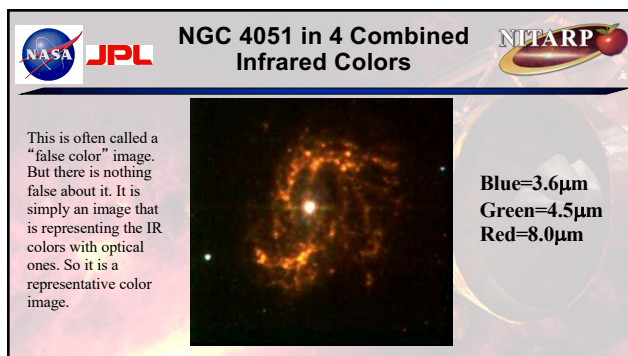
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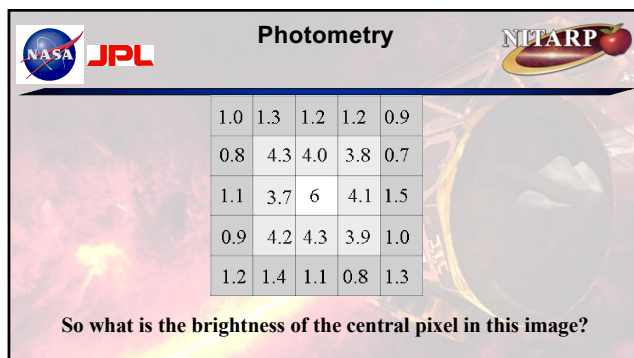
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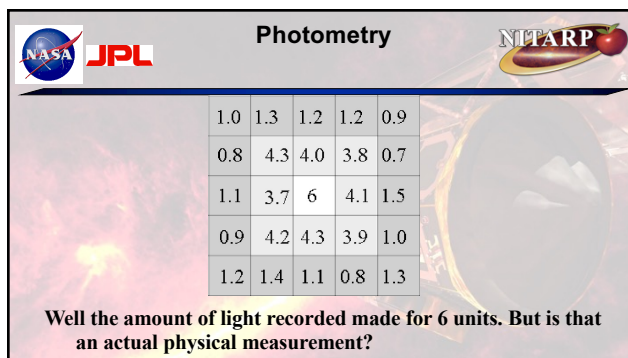
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Photometry


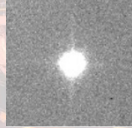
1.0	1.3	1.2	1.2	0.9
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Well the amount of light recorded made for 6 units. But is that an actual physical measurement? NO!

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Point Spread Function

- Any optical system has a finite limit to how small an image it can generate. That is how the optics and the atmosphere spread out the light from a point hence the name Point Spread Function or PSF.

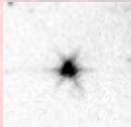
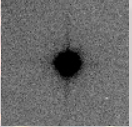



Spitzer PSF **Typical Ground Based PSF**

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Point Spread Function Inverse Display

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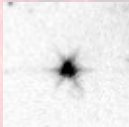
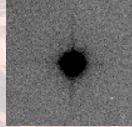



Spitzer PSF **Typical Ground Based PSF**

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Background Noise

- Also any image is the sum of the light from what you are imaging combined with noise from your detectors as well as light which is not from your object: sky, telescope, etc.


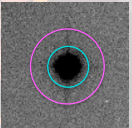



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Making Measurements

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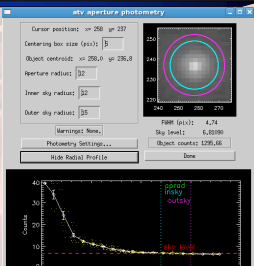



Spitzer PSF **Typical Ground Based PSF**

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Making Measurements

The radial profile then tells us how far the PSF extends before we reach the background level of the sky.



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Making Measurements

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1.2	1.4	1.1	0.8	1.3

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What you will See

- Many posters and talks will have astronomical images
- Some will be in color and some will be in black and white
- Most black and white images will be inverted for better clarity
- Now you have a sense of what astronomical images are in posters and in talks that you will see during the conference and what it means to measure an object's brightness

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