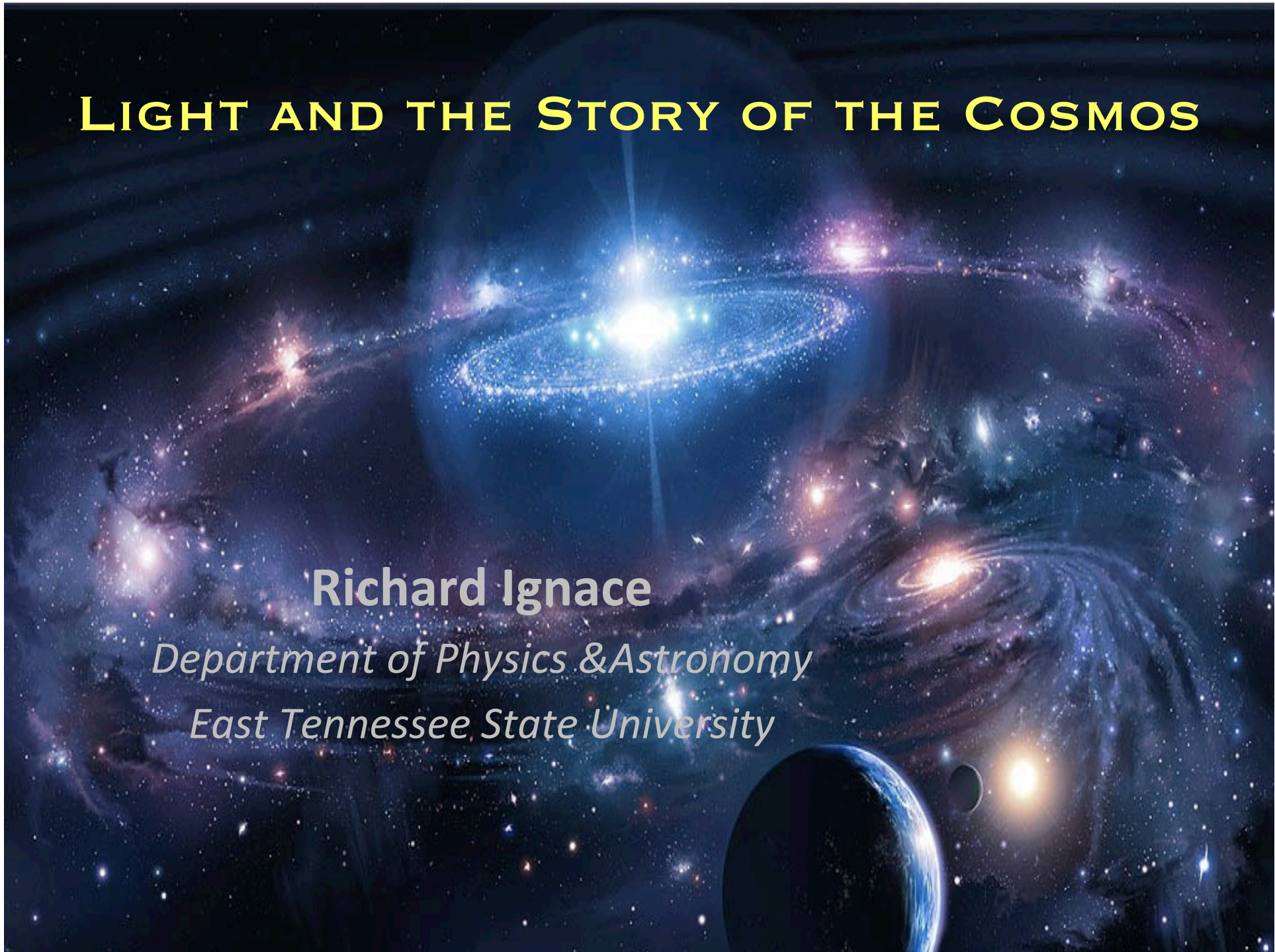


LIGHT AND THE STORY OF THE COSMOS

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Light: Our lifeline to the universe



YOSEMITE SUNSET BREAKING LIGHT

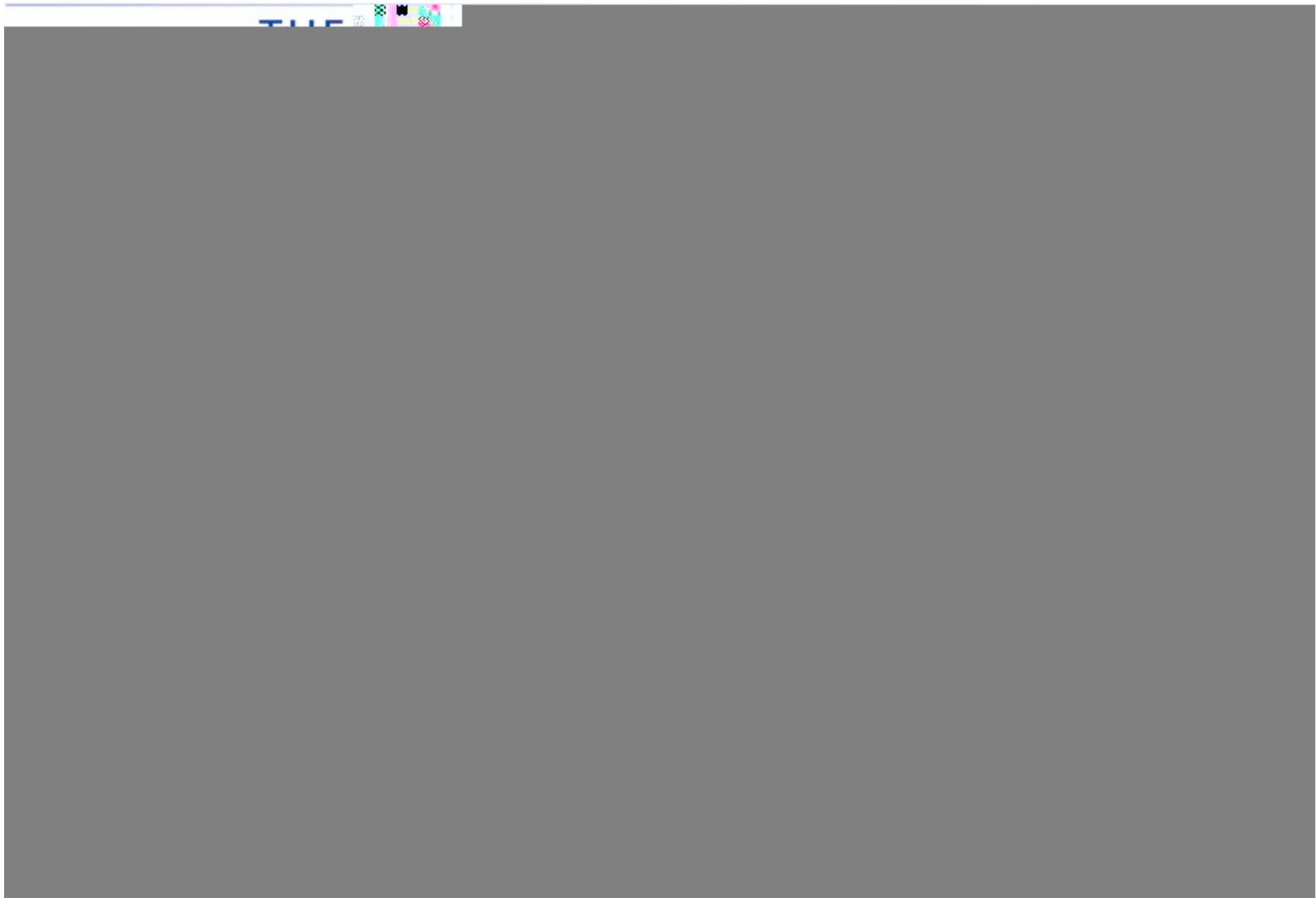
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- The science of astronomy relies entirely on our ability to measure light.
- Light is essentially the only connection that we have with the content of the cosmos.
- A major theme of astronomy is that, “what you see depends on how you look.”

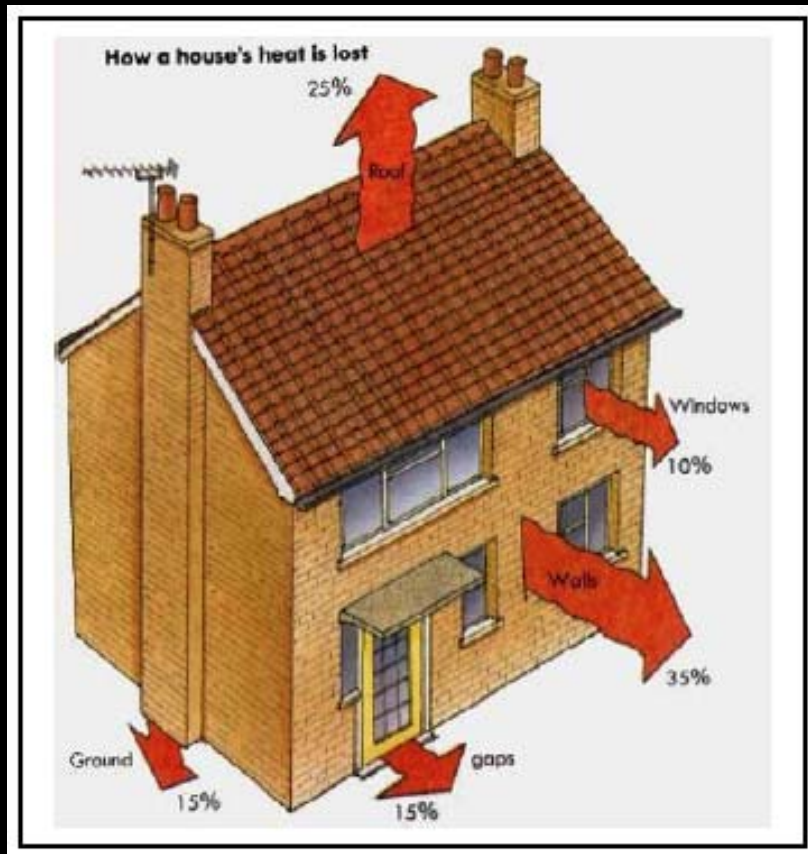
How Does Light Talk To Us?



- We describe light in terms of “colors”.
- A particular color is signified by a wavelength or frequency of the light.
- In the visible band seen by our eyes, we use words like “red” and “orange”. But there are other colors, like X-rays and radio.
- In vacuum light travels at 300,000 km per second. This is fast, but finite.
- In vacuum, all colors of light travel at the same speed.

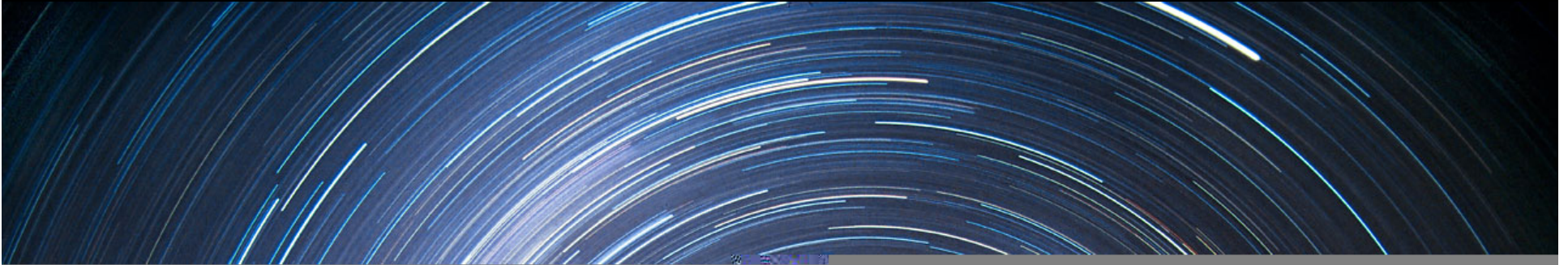


Different Kinds of Light Probe Different Things: The Example of Infrared

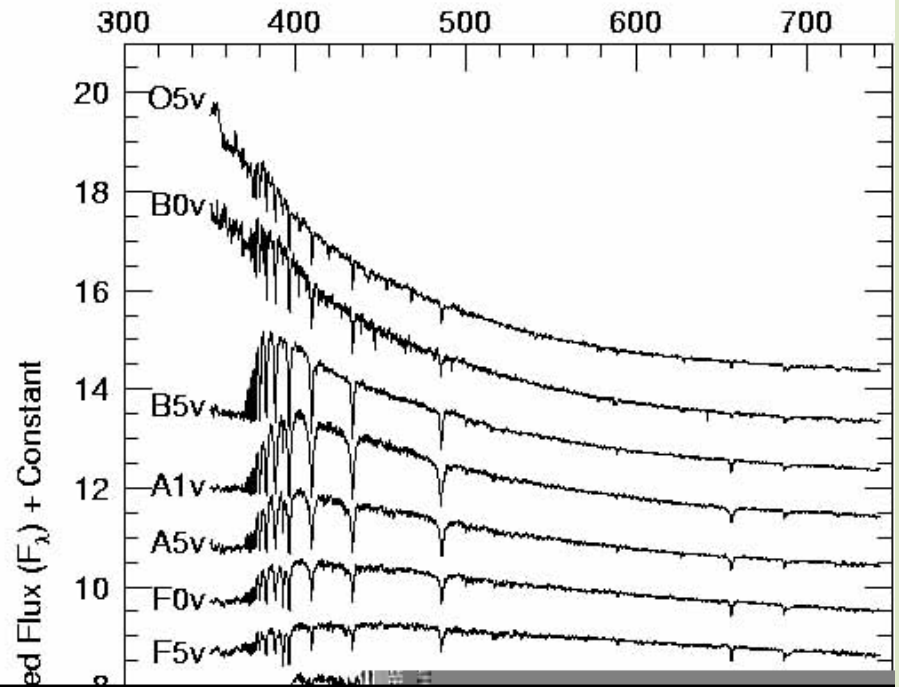
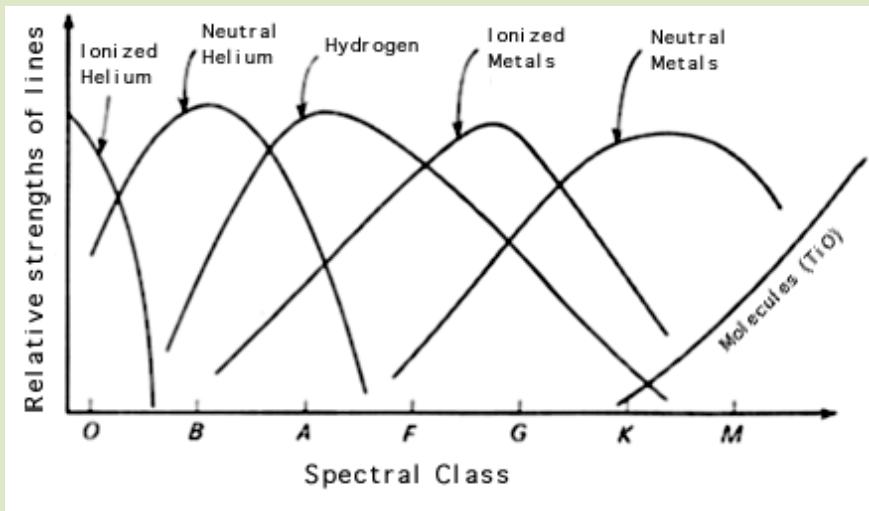


In optical we see a house by virtue of reflected light, but in infrared we perceive the house in terms of temperature.

Star Trails



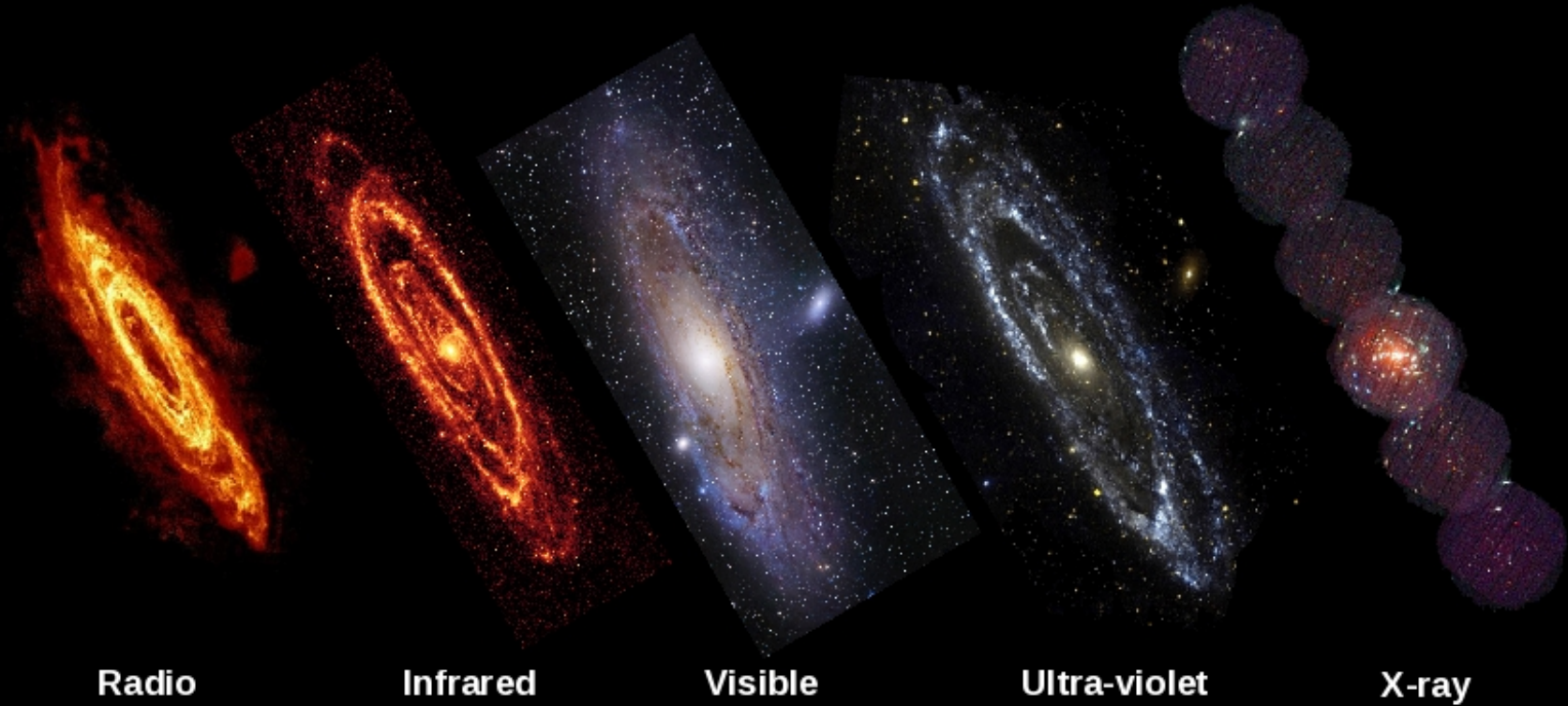
What Does Light Say About the Stars?



And, Galaxies?



The Andromeda Galaxy (M31)



H clouds

Young stars,
Dust emission

Stars, dust lanes
Reflected light

Massive
Stars

Extreme
Stars

Questions?