

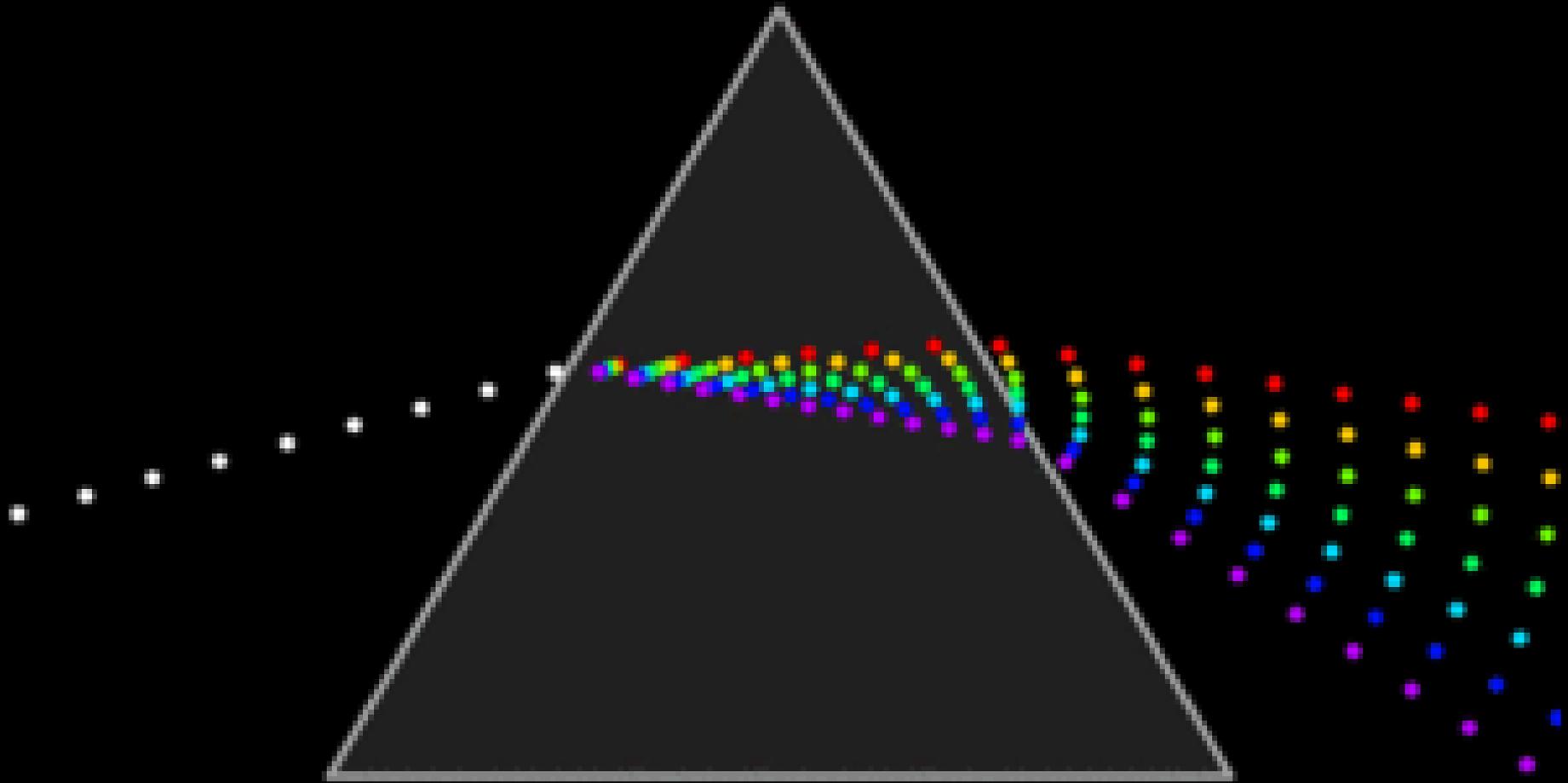
Light

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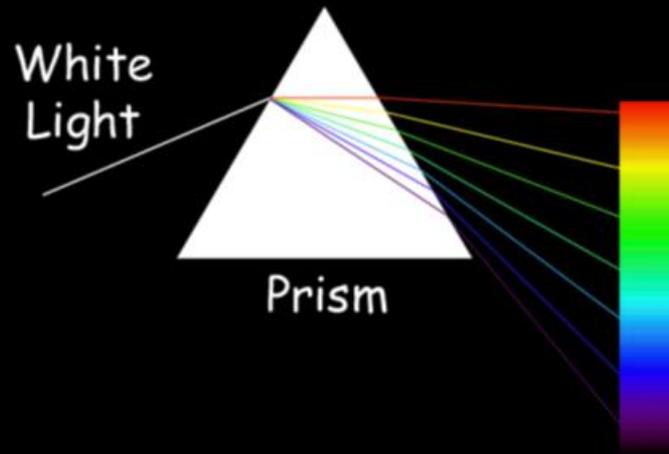
# What is Light?

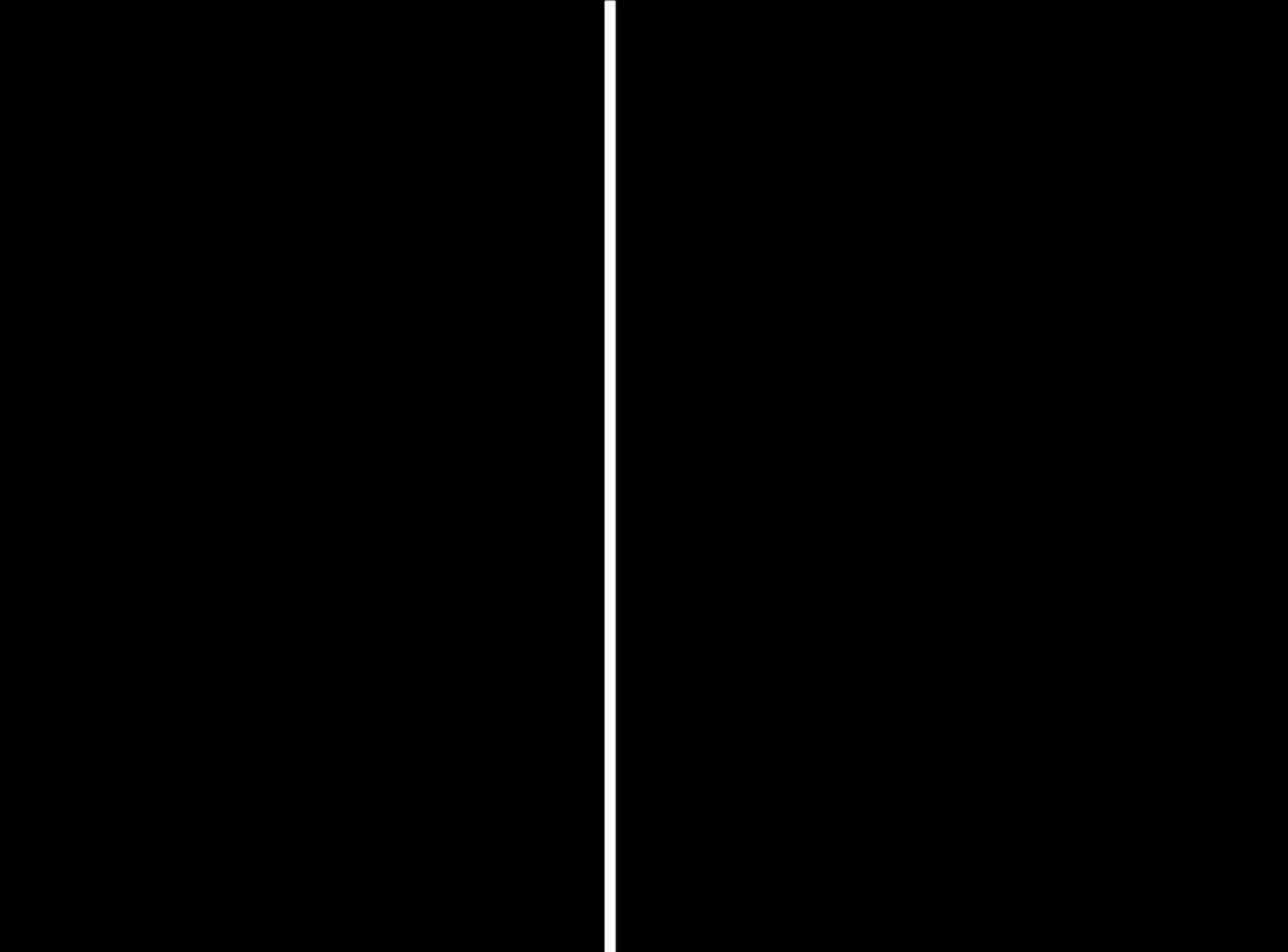


# A Prism Breaks It Into Its Parts

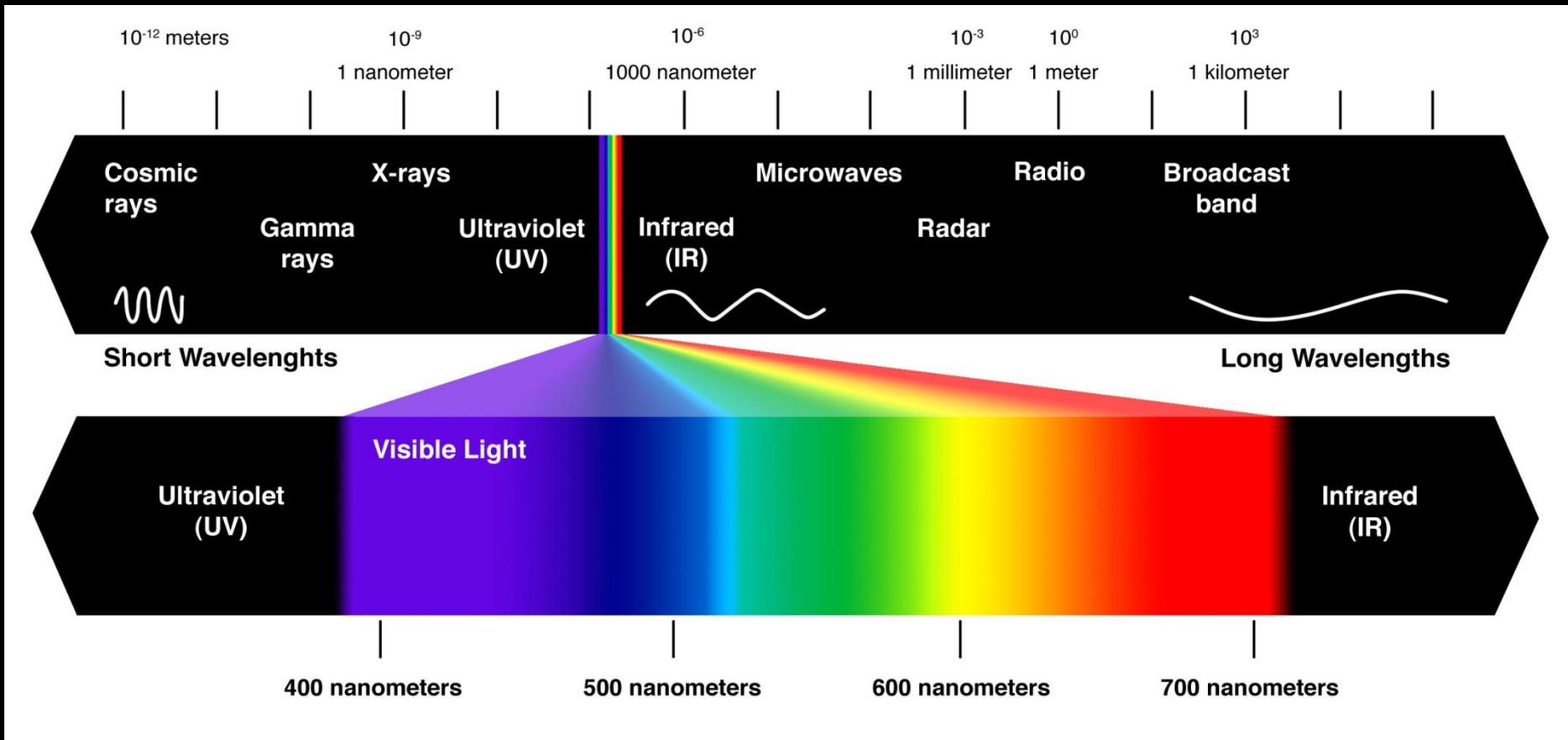


# White is all Colors

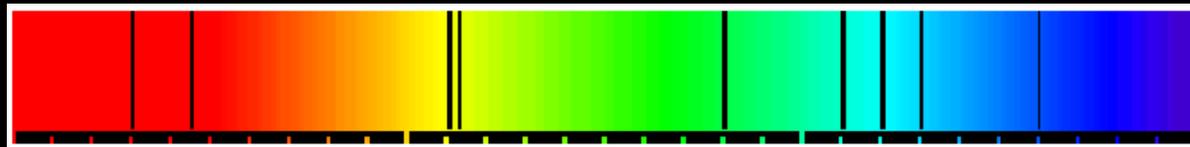
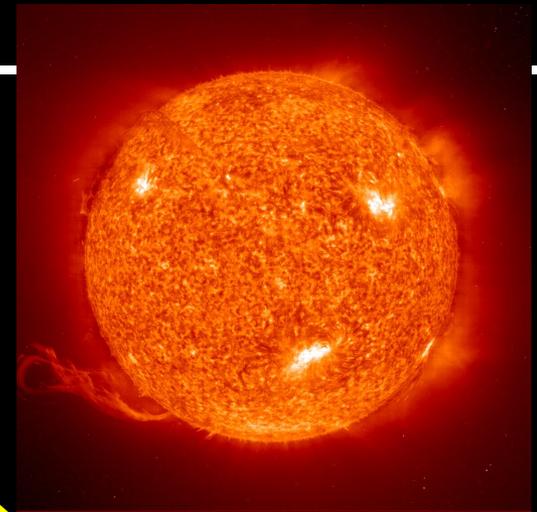
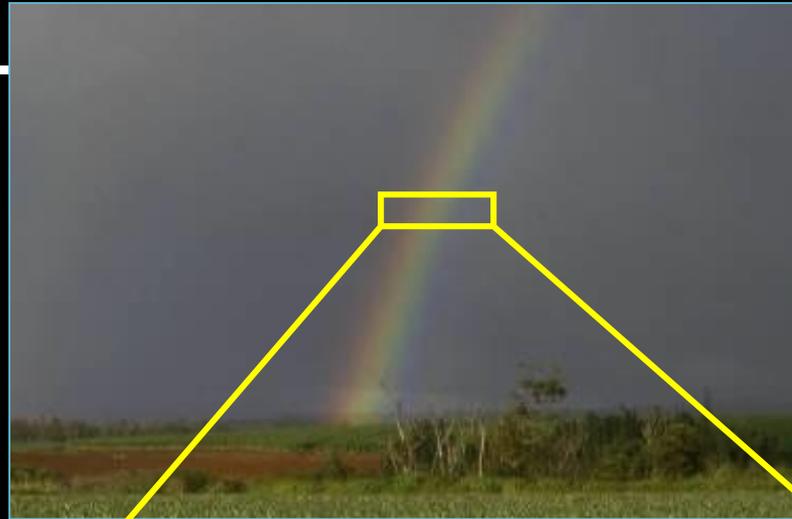




# The Electromagnetic Spectrum



# Studying the Rainbow



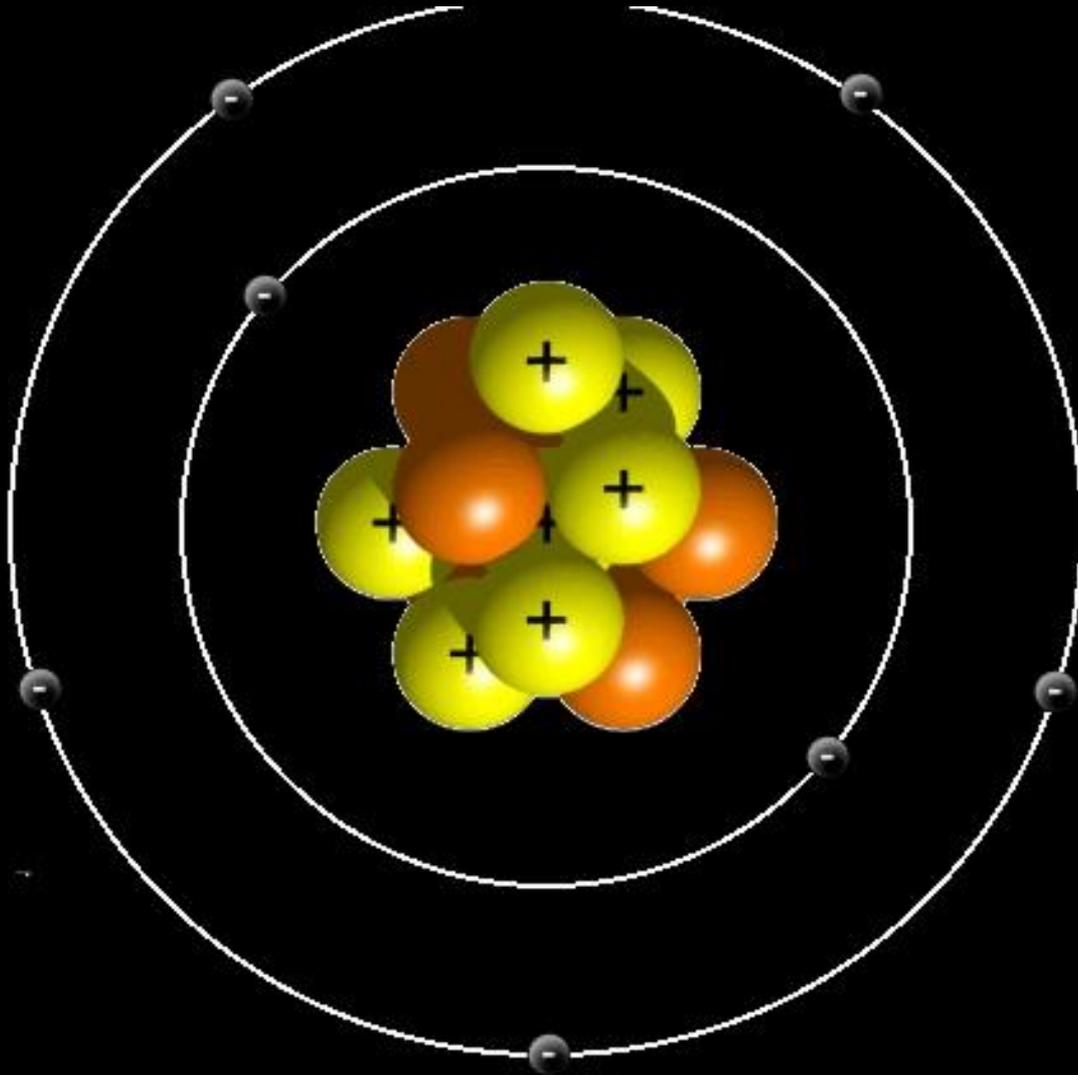
*Simulated Spectrum of the Sun*

Courtesy of Dr. John Beck

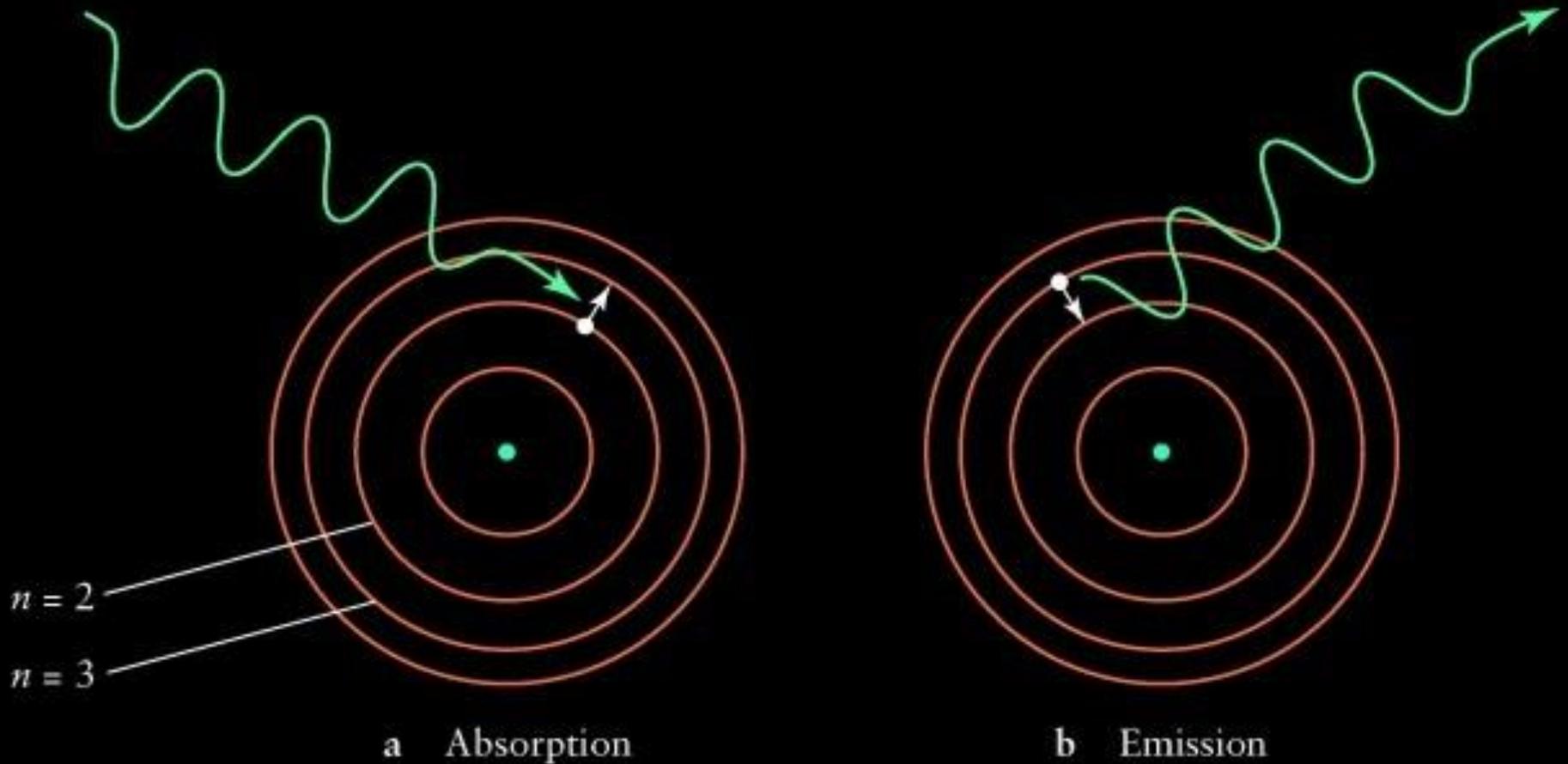
# Where do the Lines Come From?

- Lines are caused by atoms.
- The atoms of each element cause a different set of lines.
- By studying these lines, we can find out what elements are present.
- This science is called **Spectroscopy**.
- It is used to identify the types of atoms for chemistry, astronomy and many other sciences.

# The Bohr Model

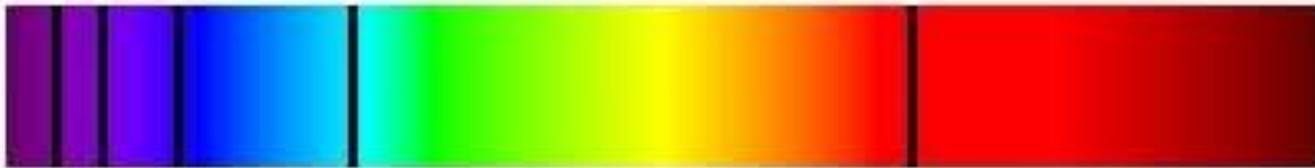


# The Cause of Spectral Lines



# Emission vs. Absorption

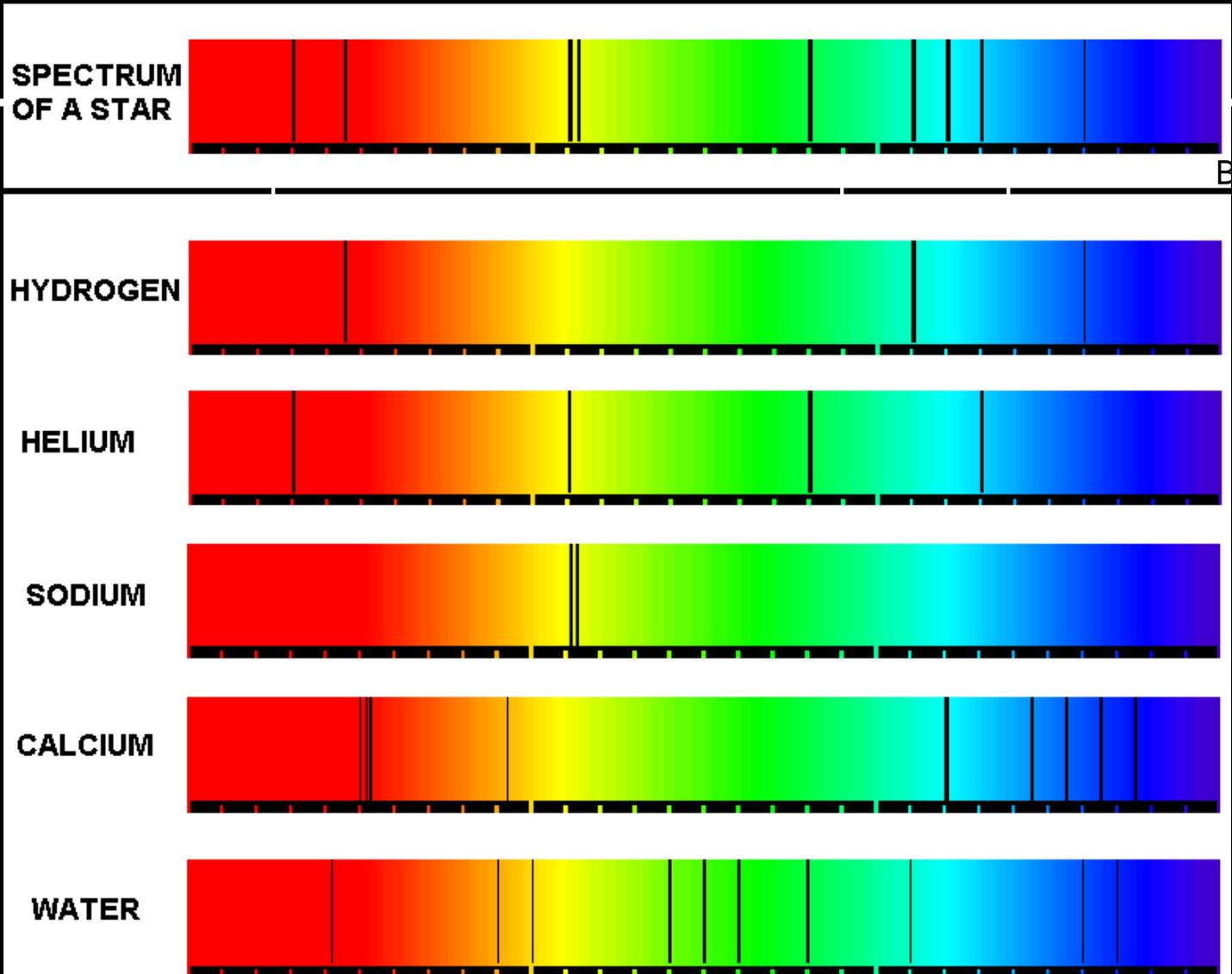
Hydrogen Absorption Spectrum



Hydrogen Emission Spectrum



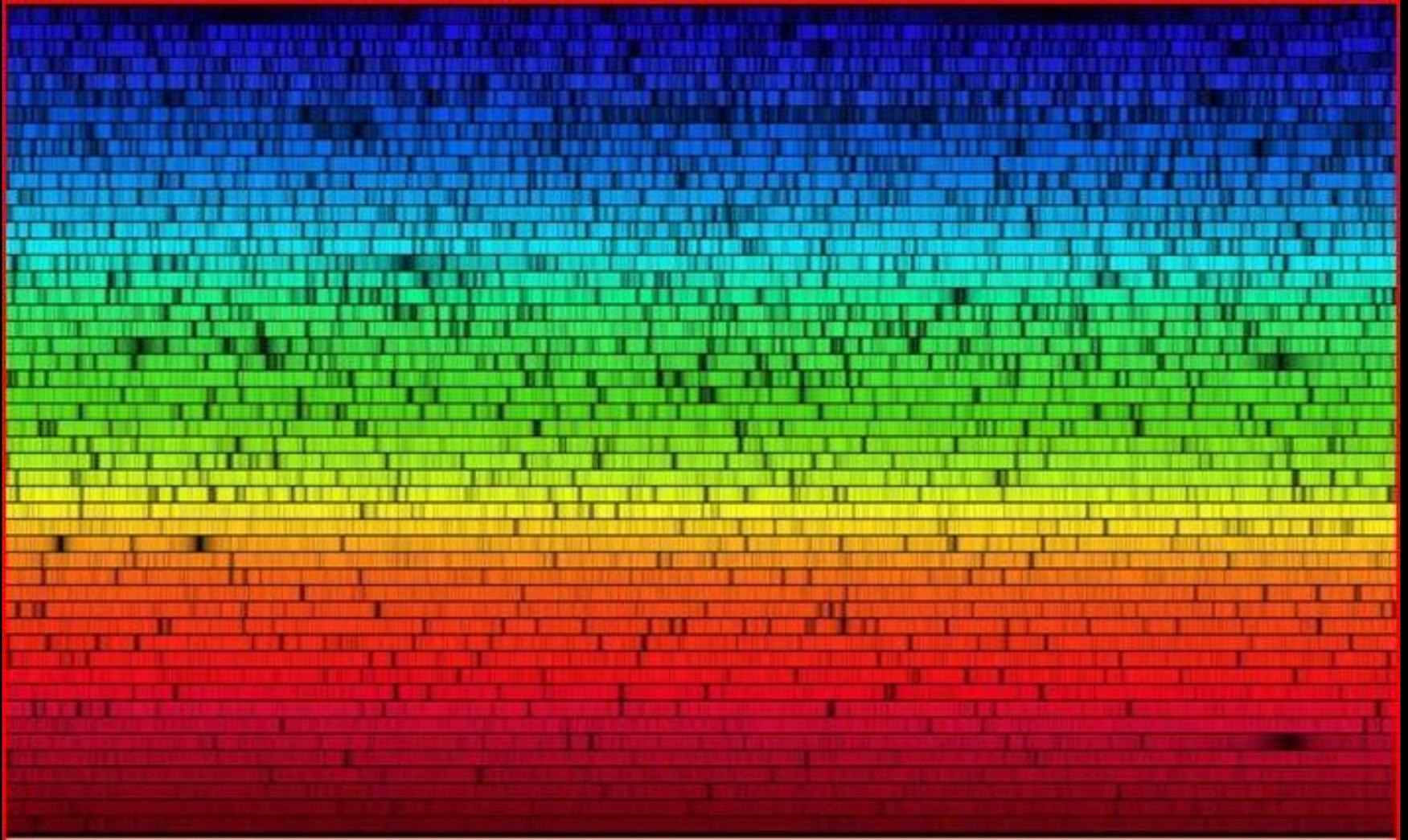
# What is a Star made of?



# Spectroscopy in Astronomy

- Determine Composition
- Find distance to other stars and galaxies
- Find Planets around other stars

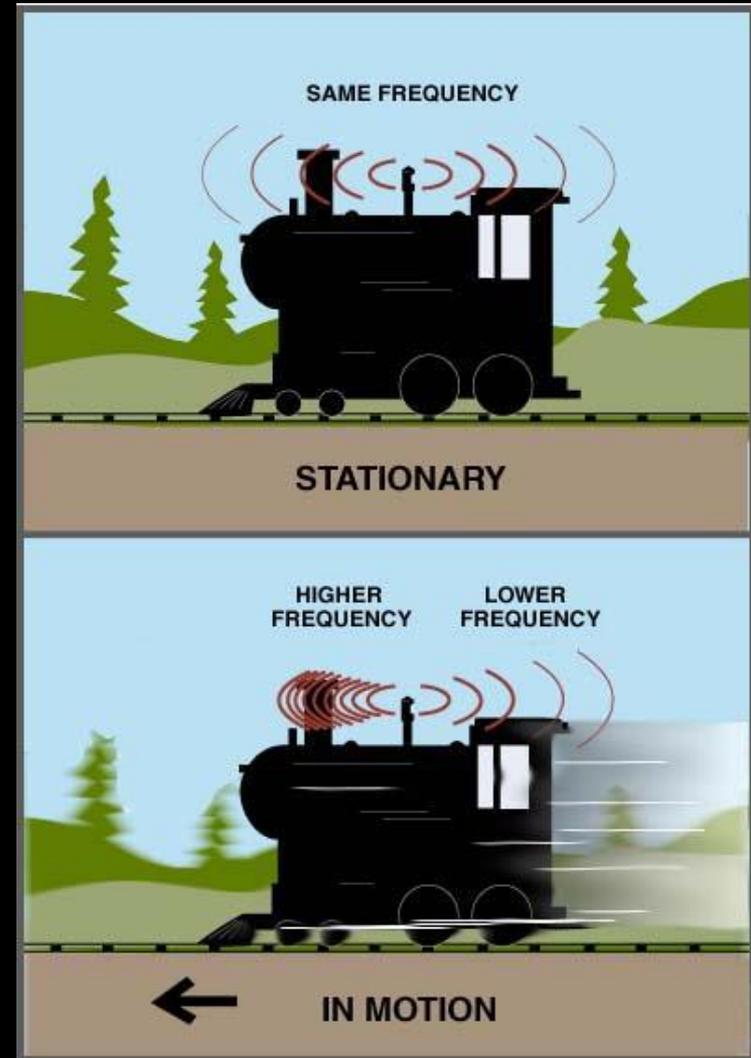
# Determine Composition



# Find Distance to Other Stars and Galaxies

## Doppler Effect

- ❖ Waves are compressed when an object is moving toward the observer
- ❖ Waves are stretched when an object is moving away from the observer
- ❖ By measuring the change in position of spectral lines we can measure speed of the object.

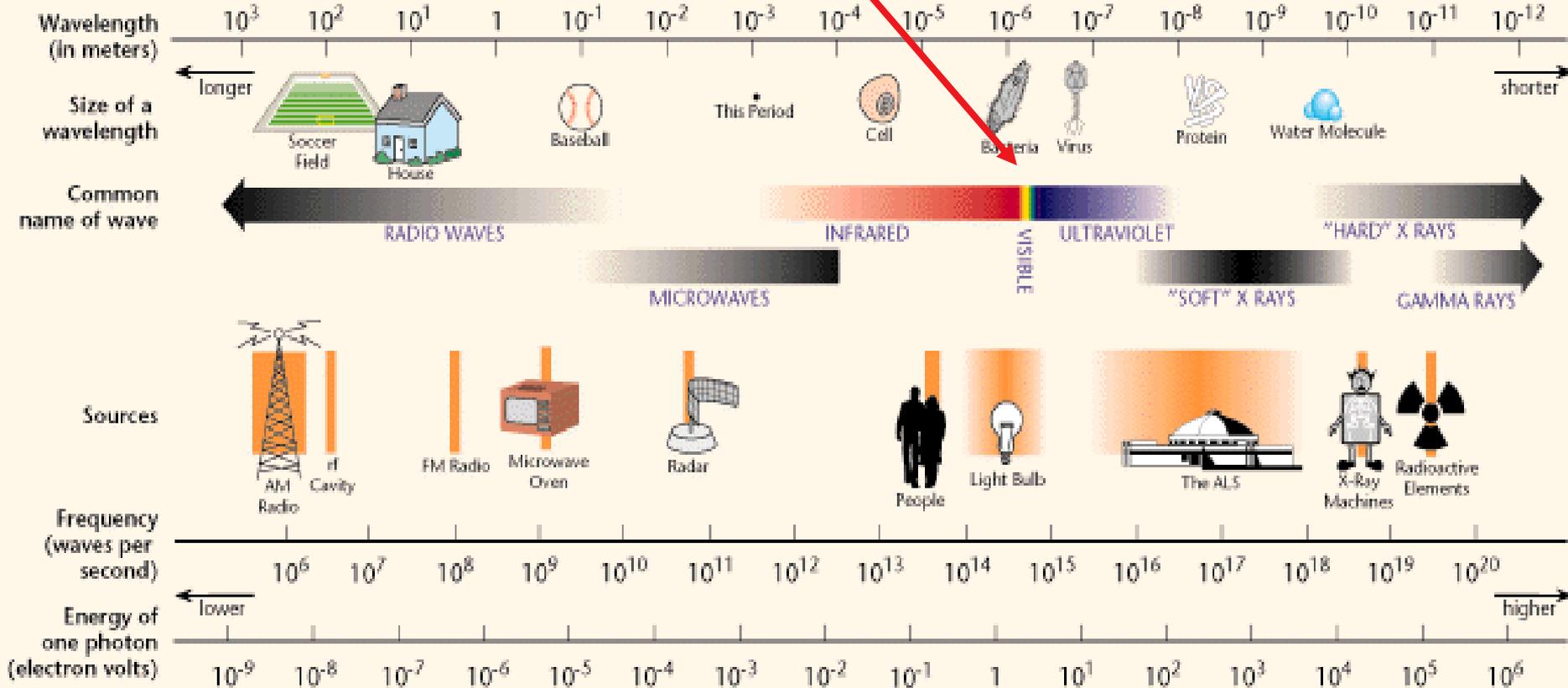


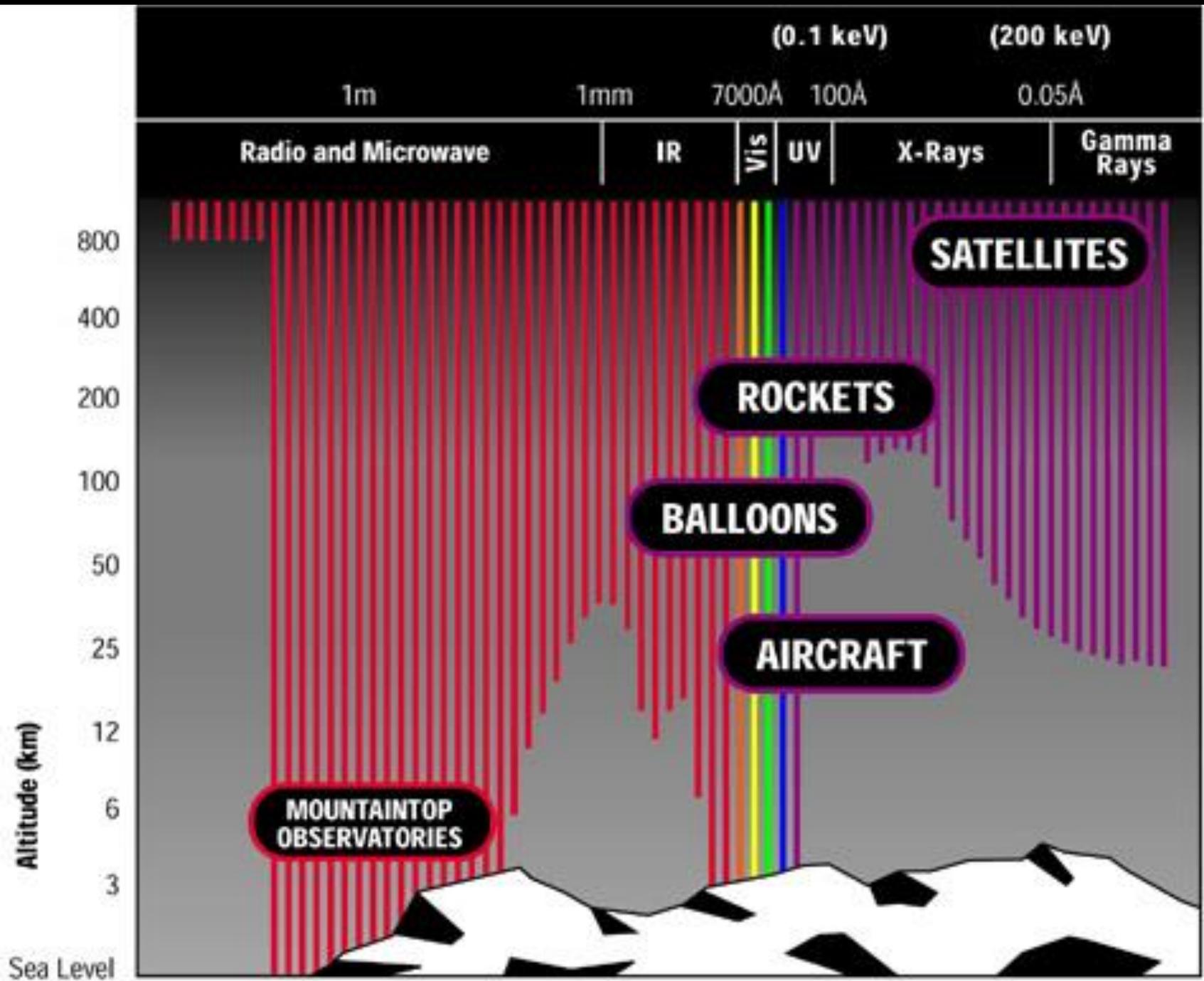
# Invisible Light

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Our eyes see only a tiny part of the electromagnetic spectrum...

# THE ELECTROMAGNETIC SPECTRUM





# Infrared Light

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# Infrared Light





# Ultraviolet Light

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# Ultraviolet Light



# Other Kinds of Light

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# Wilhelm Röntgen



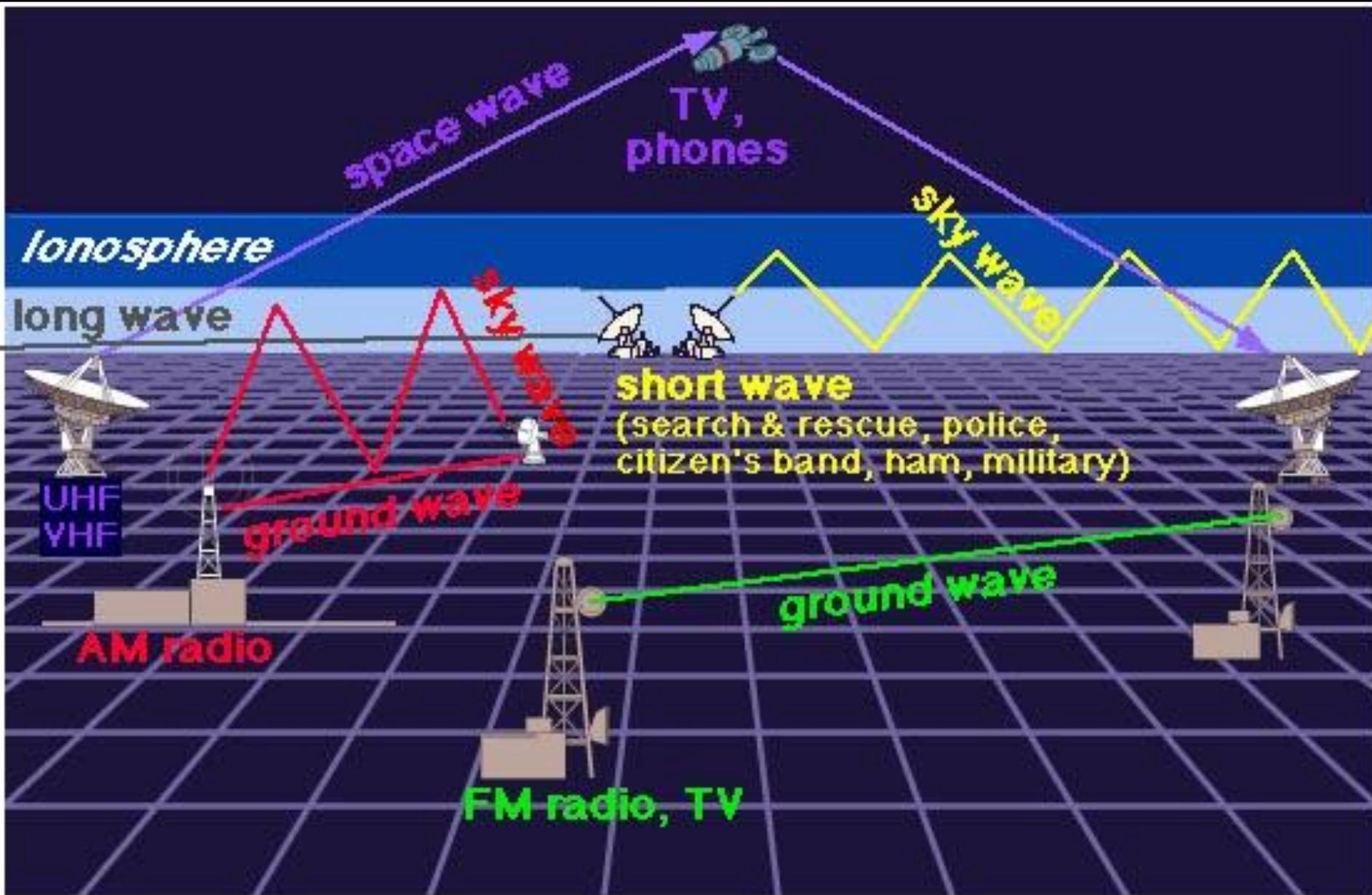
# Other Invisible Light



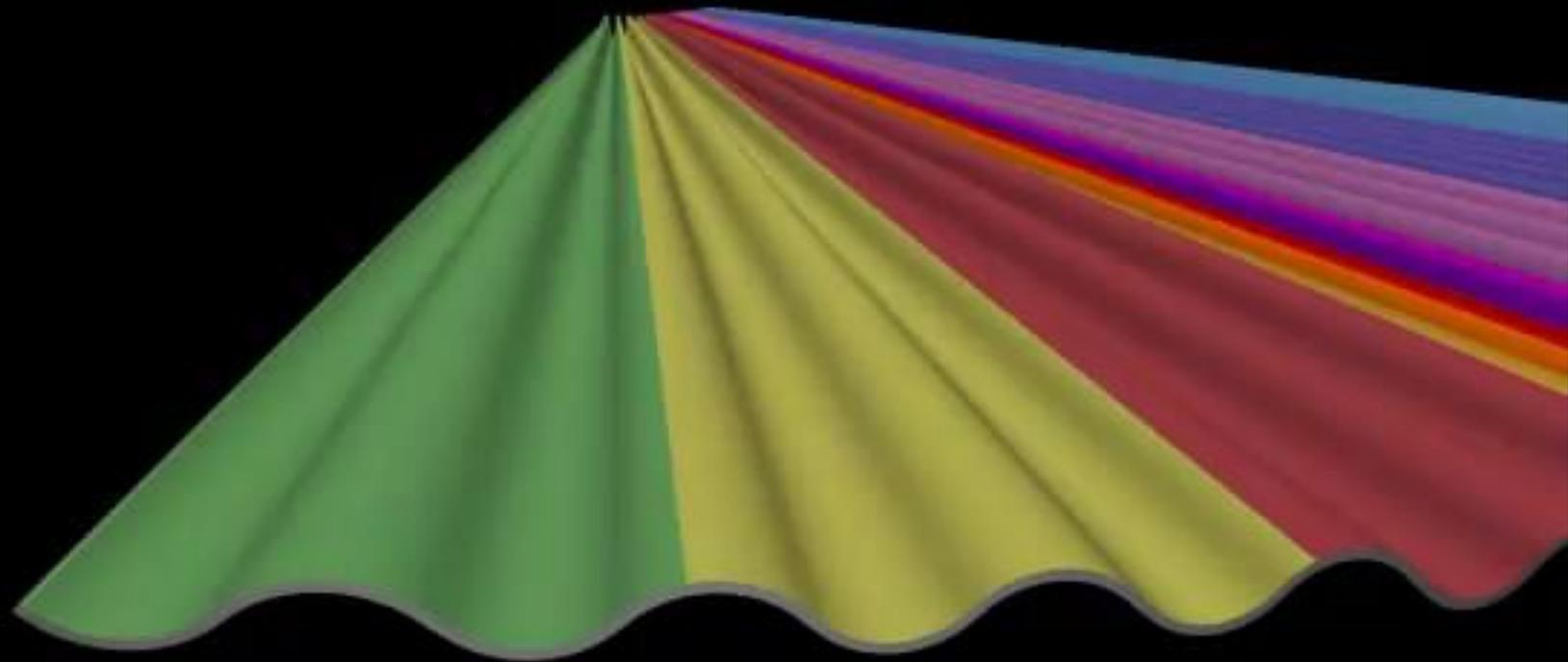
# Radio Waves



# Radio Waves



# The Electromagnetic Spectrum



**RADIO**

**MICROWAVE**



Have a  
COLORFULL  
Day