



What is Light

- *Light is a Wave*

- **LIGHT IS A PARTICLE**

LIGHT IS A

WAVE!



"Once and for all I want to know what I'm paying for. When the electric company tells me whether light is a wave or a particle I'll write my check."

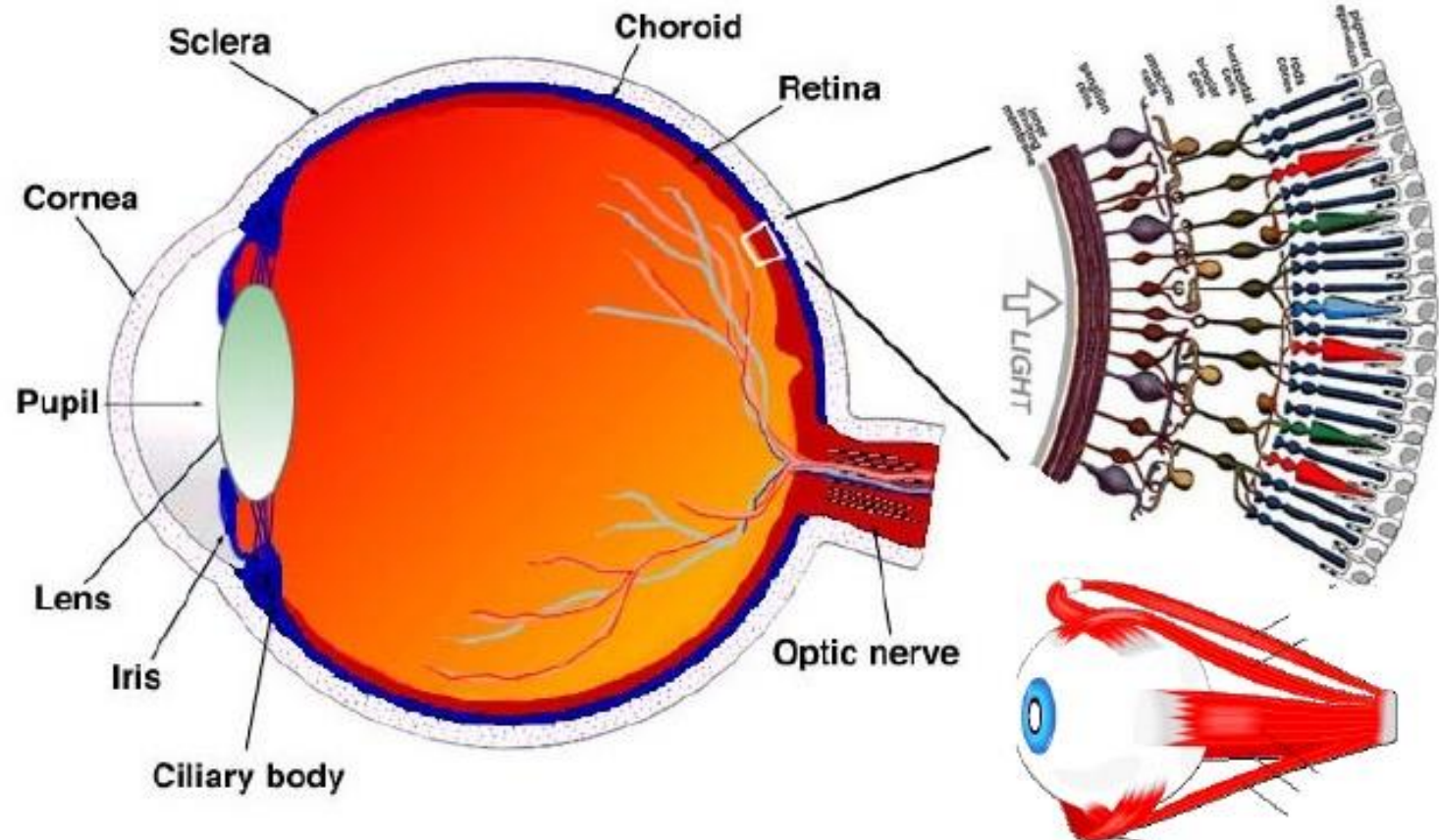
Sensing Light

- Humans have two light detectors.

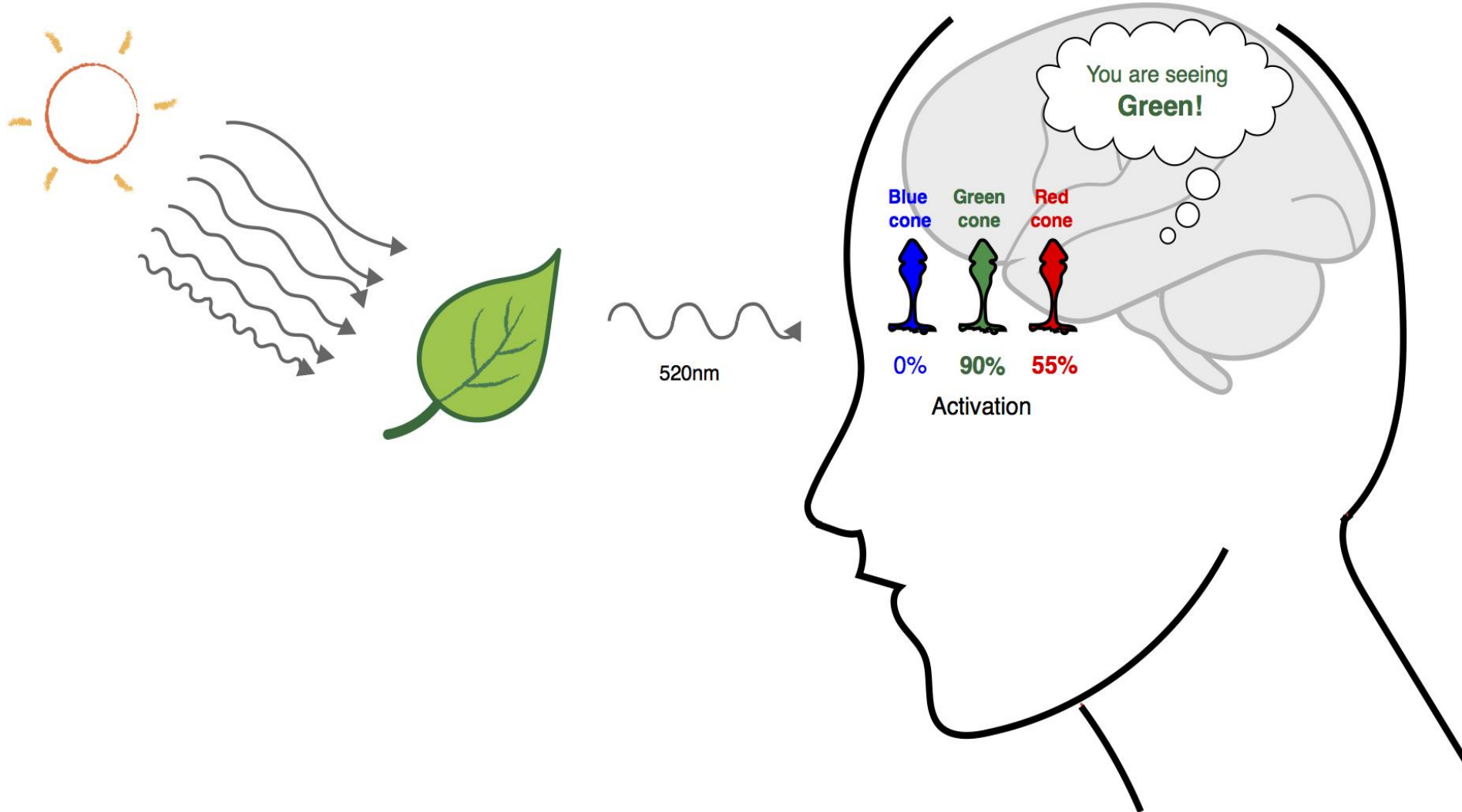


Sensing Light

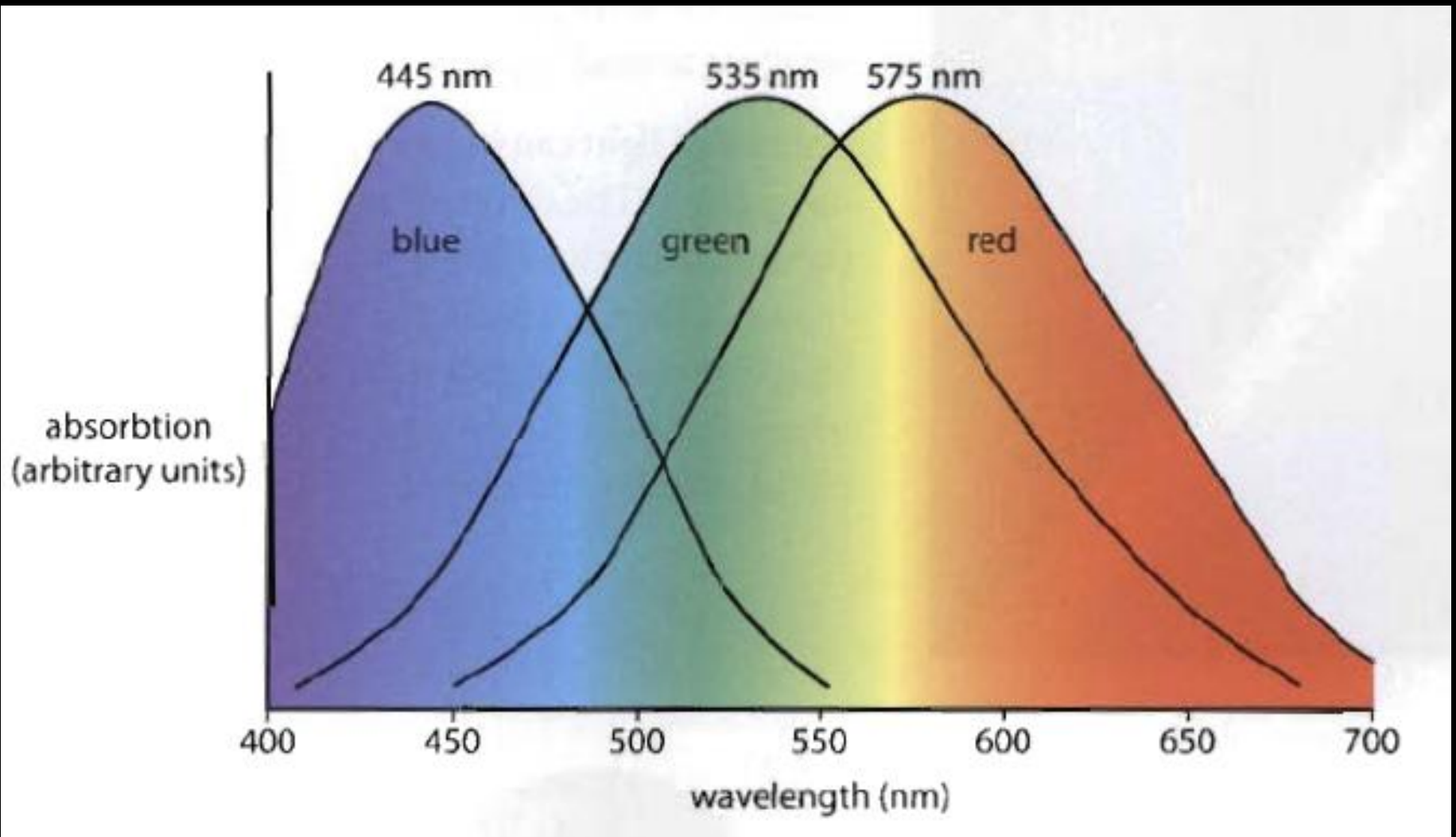
The Human Eye



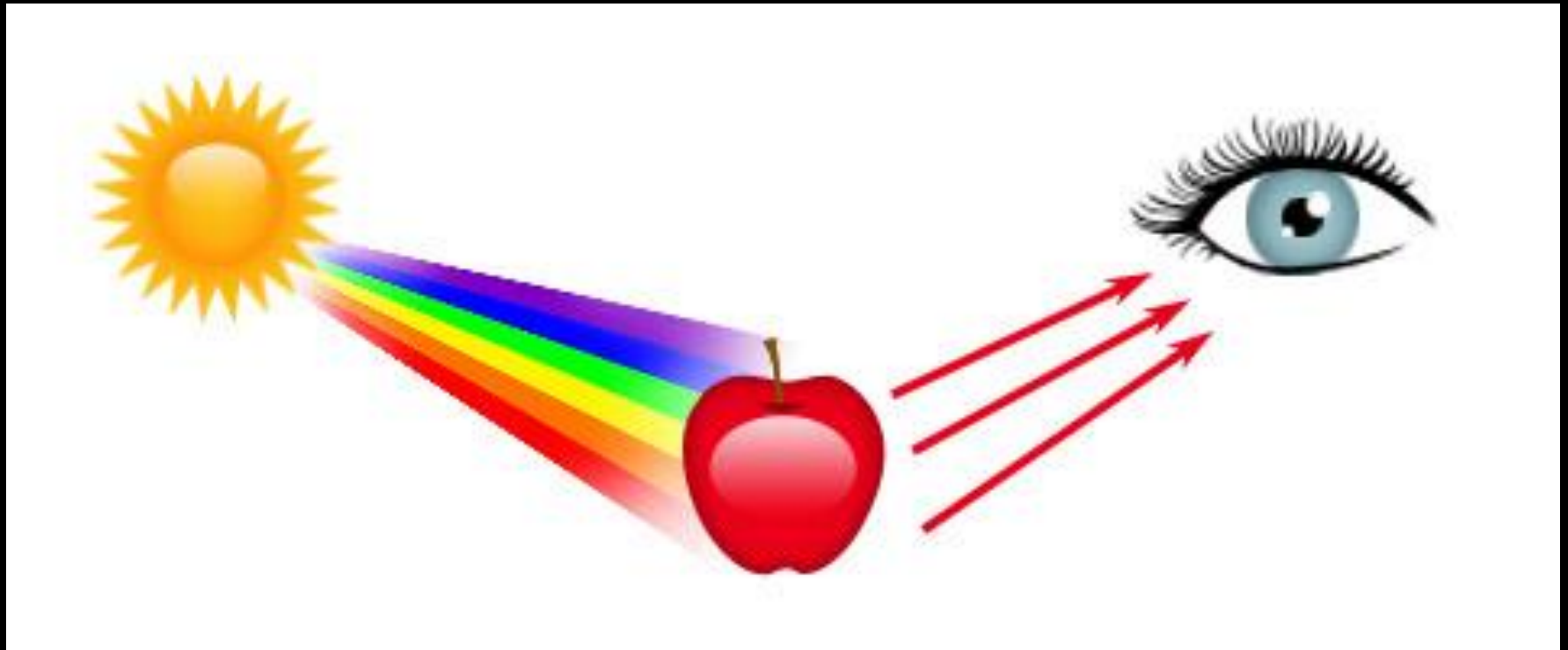
Sensing Light



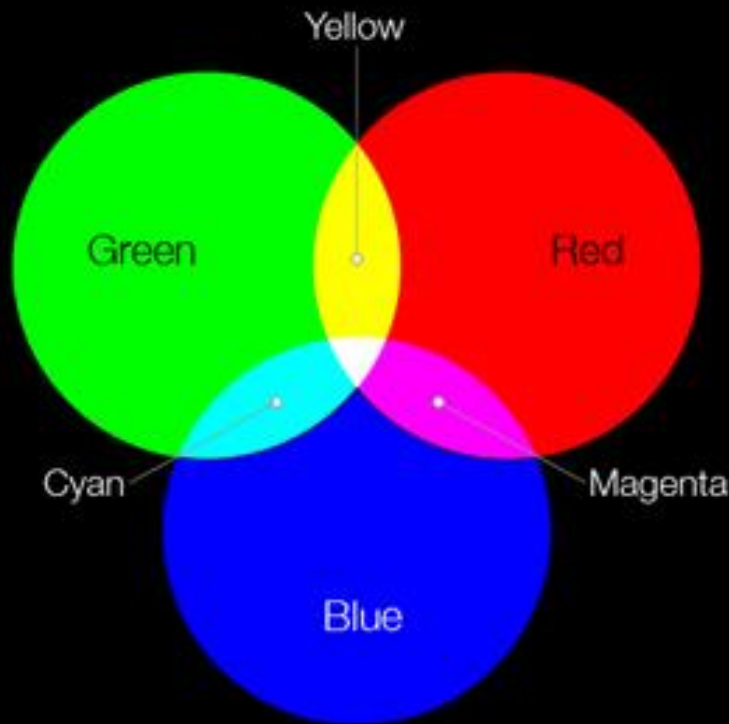
Sensing Light



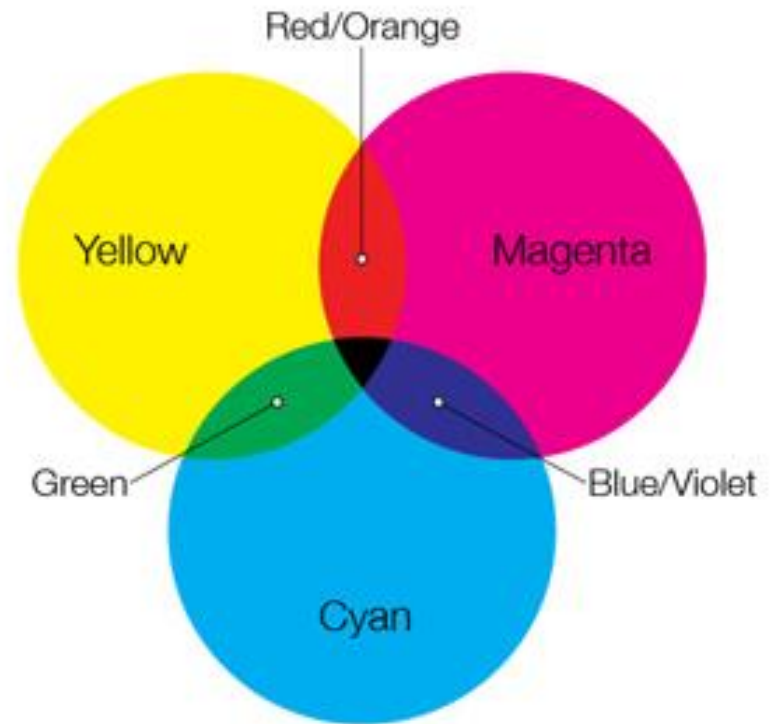
Why is an Apple Red?



What Are the Primary Colors?



Additive Color Model
(light, RGB)

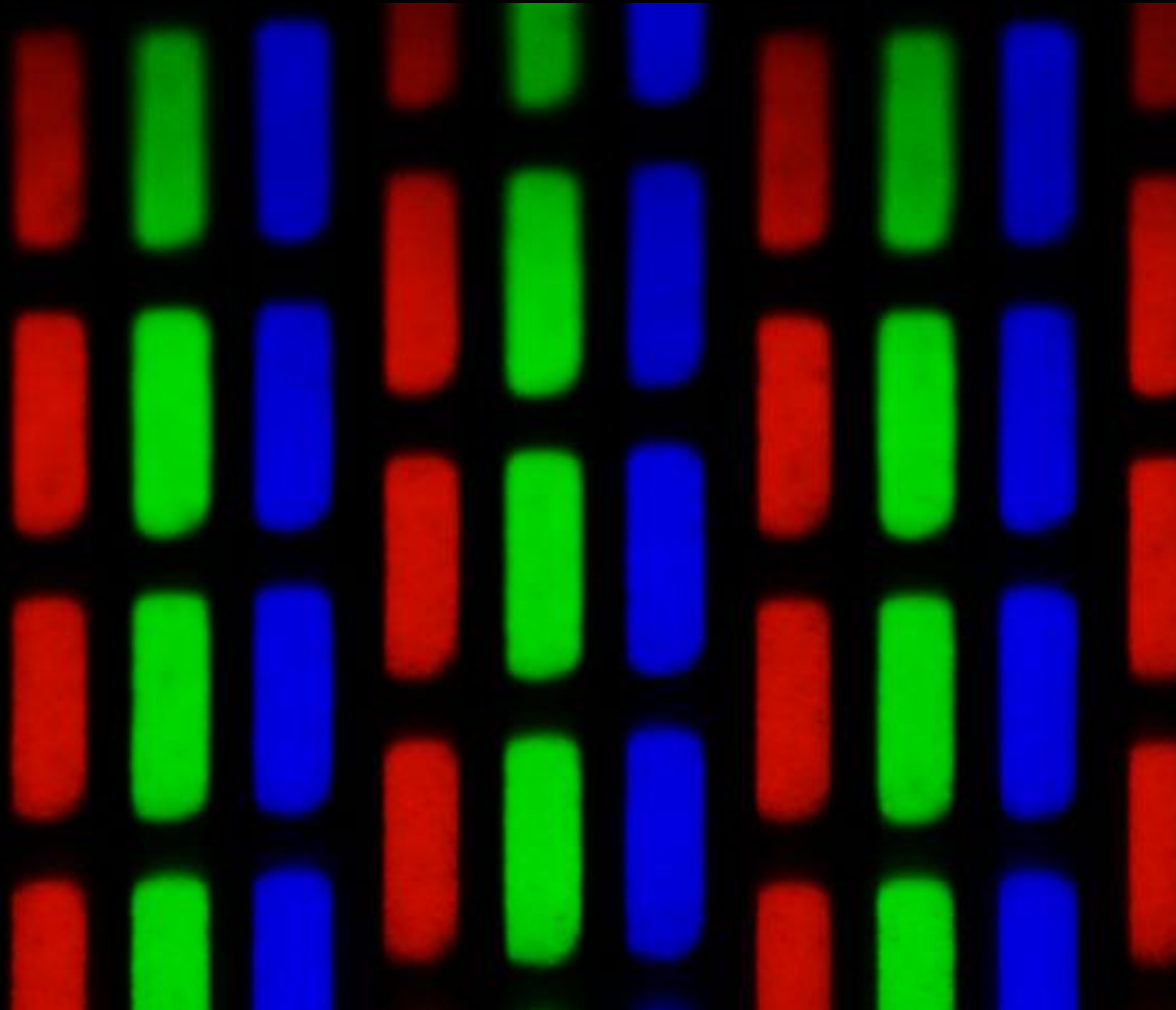


Subtractive Color Model
(pigment, CMYK)

What Are the Primary Colors?



What Are the Primary Colors?



Altering Light's Path

**BEAMS
OF LIGHT**

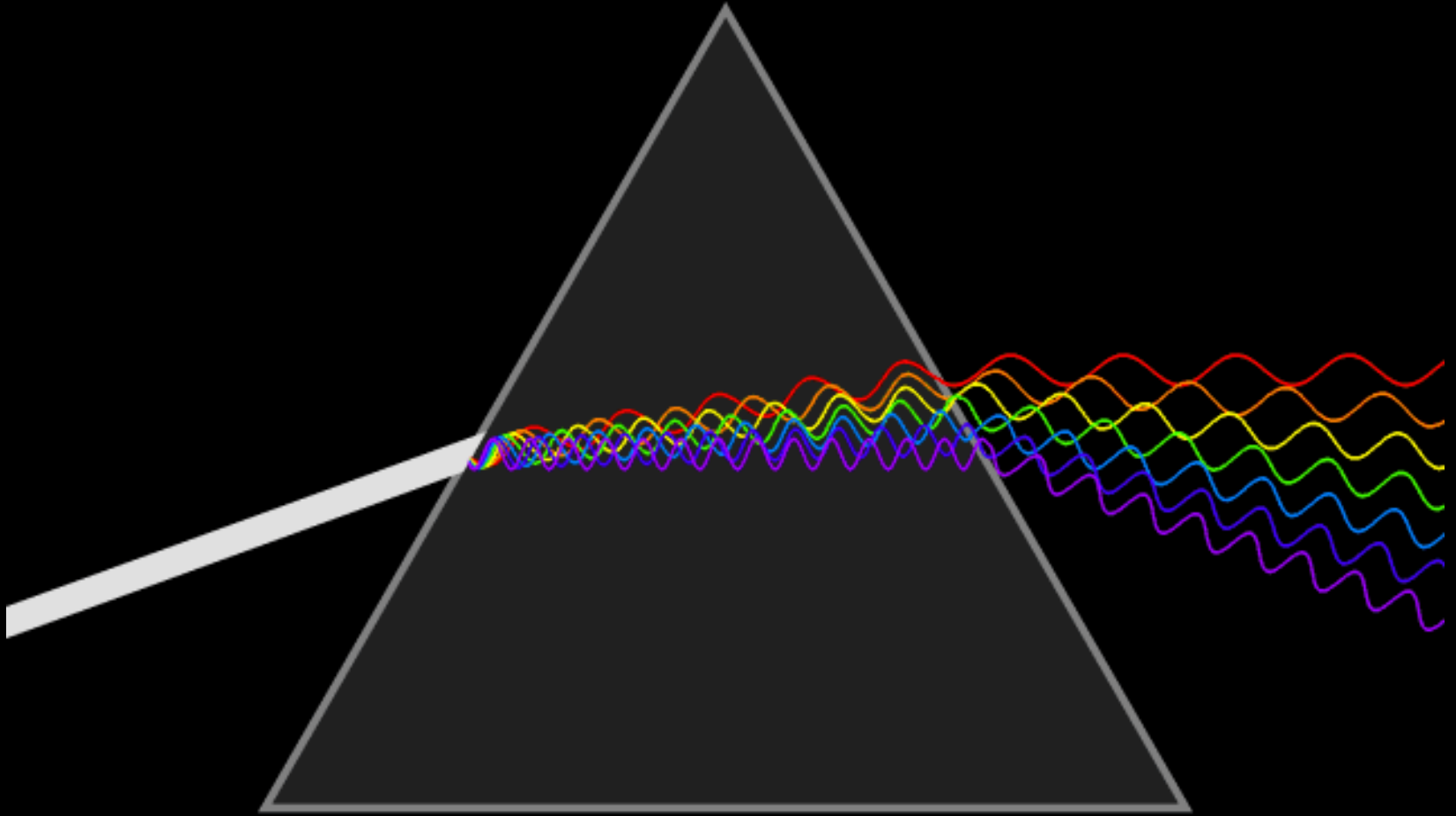
Refracted

Reflected

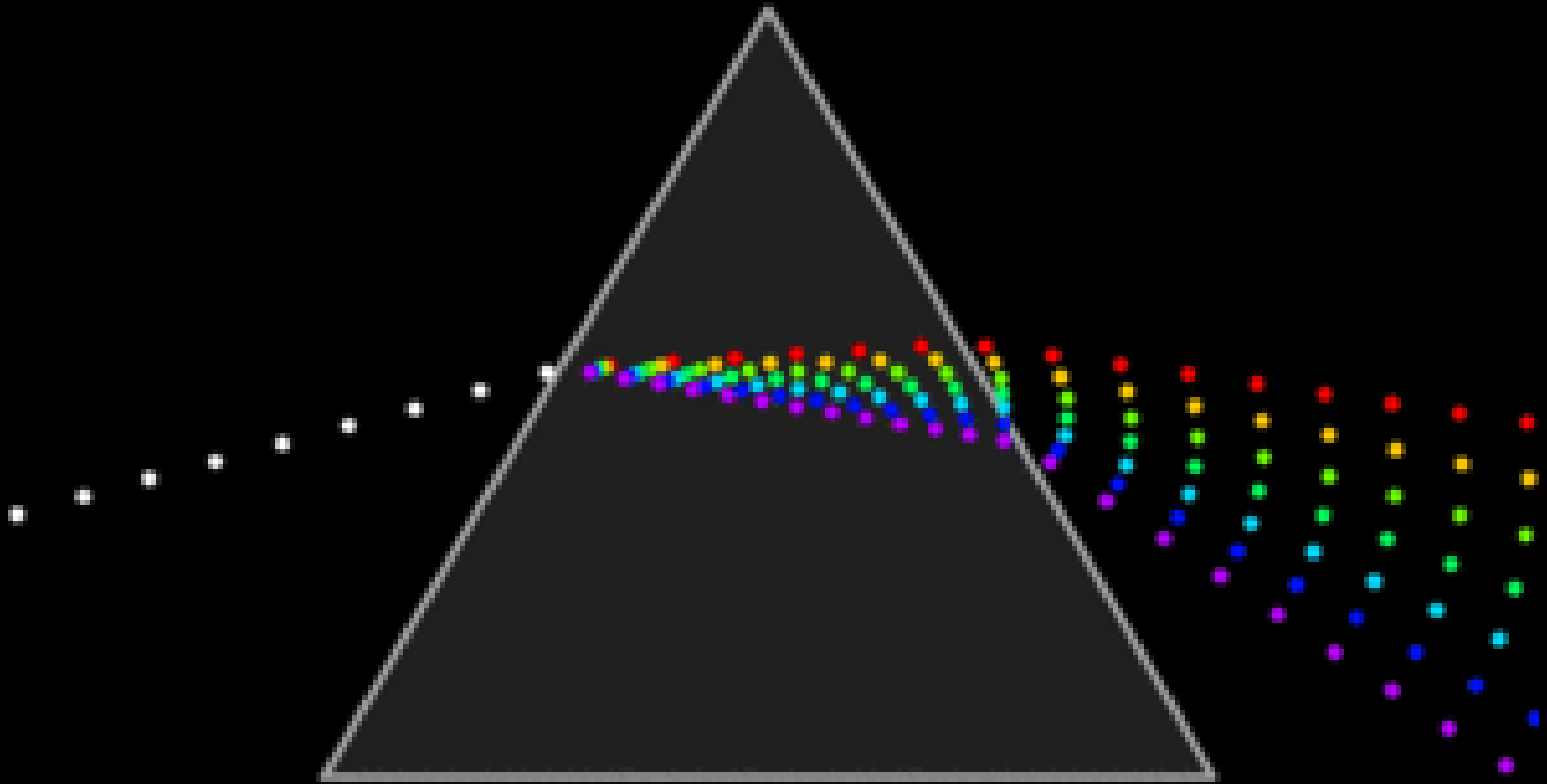
Diffracted



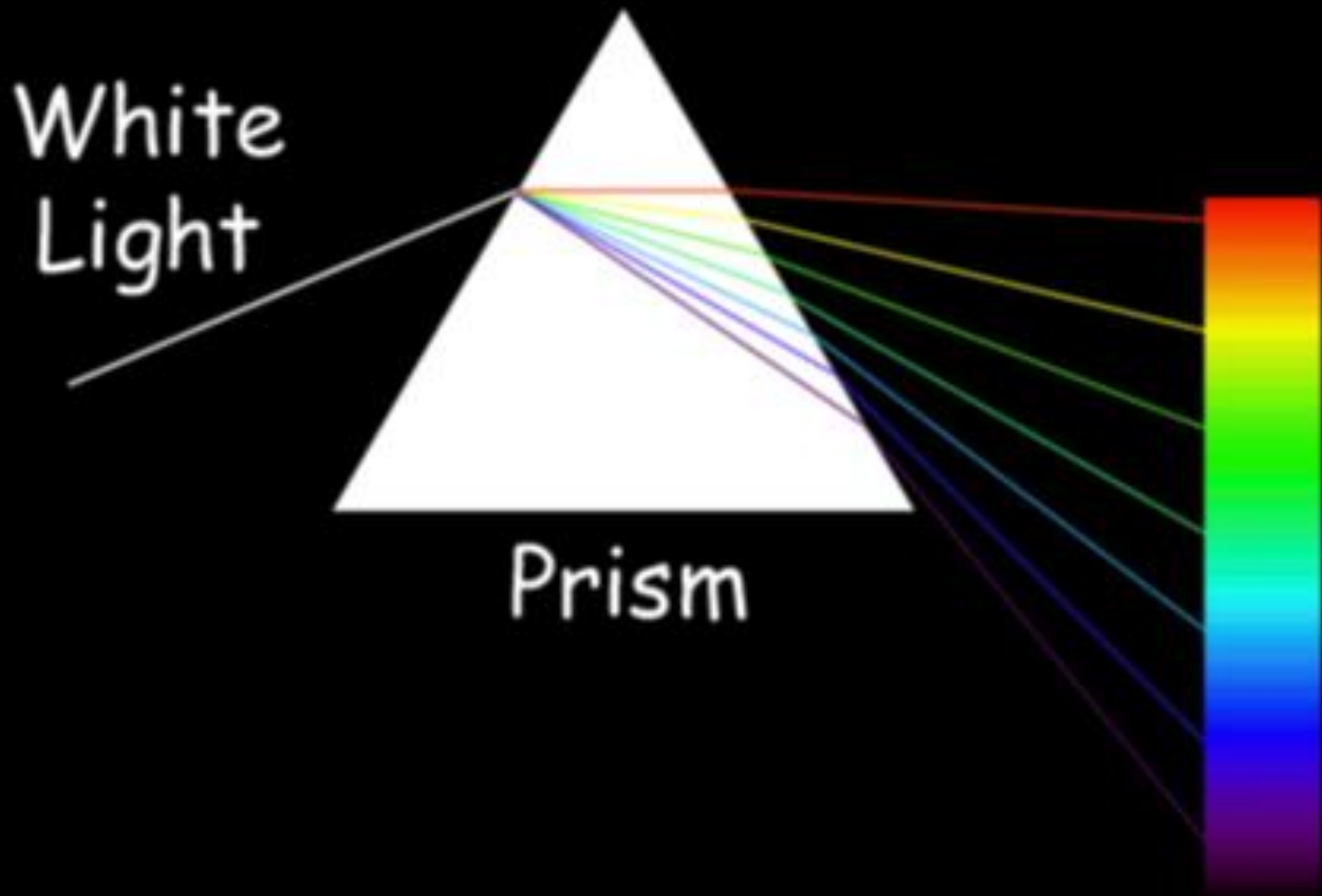
A Prism Breaks Light Into its Parts



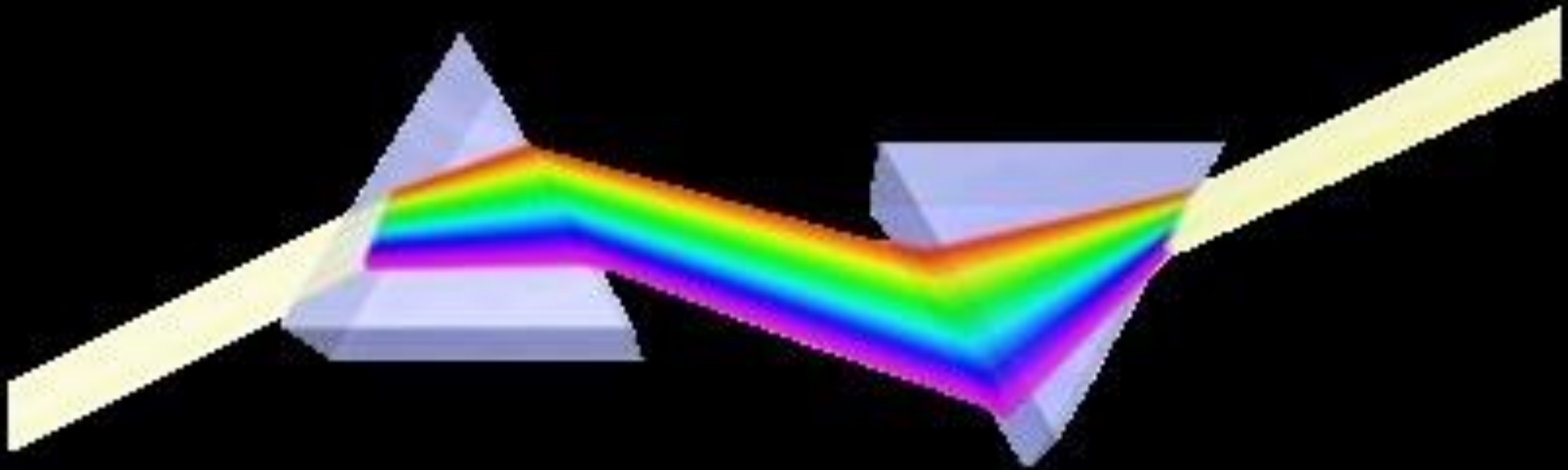
A Prism Breaks Light Into its Parts



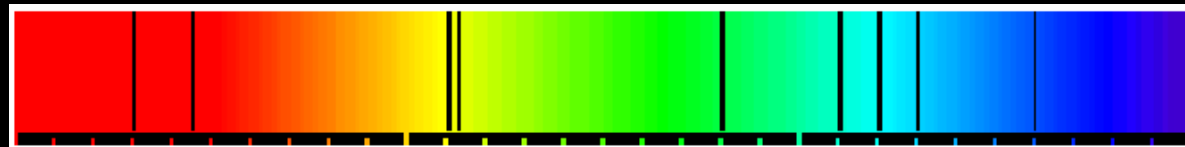
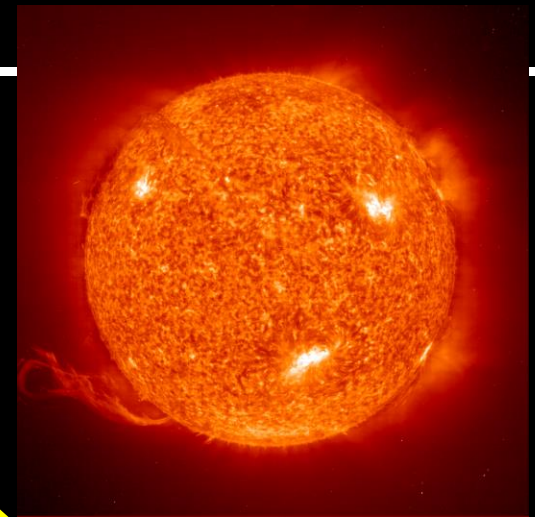
White is all Colors



Newton's Experiment



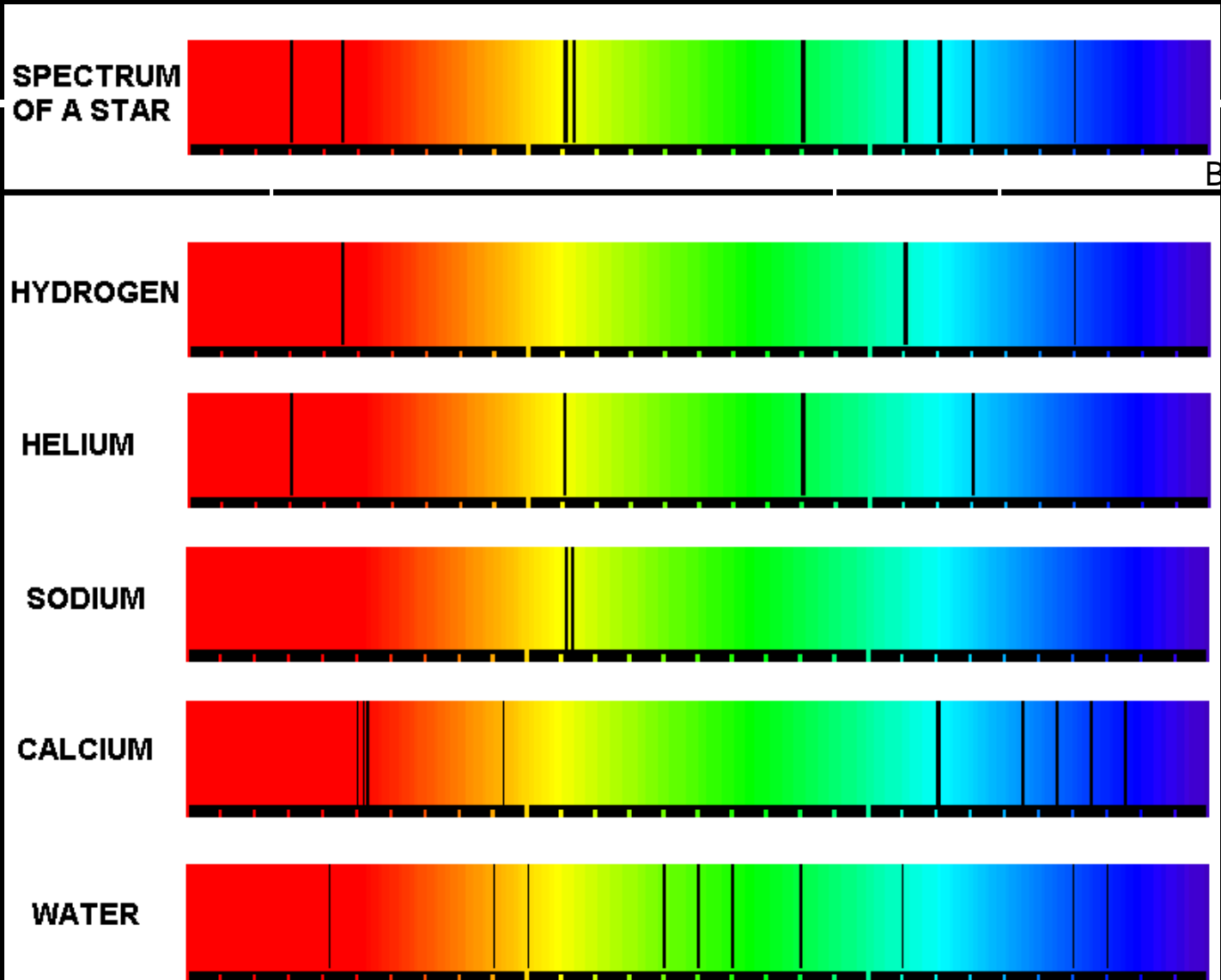
Studying the Rainbow



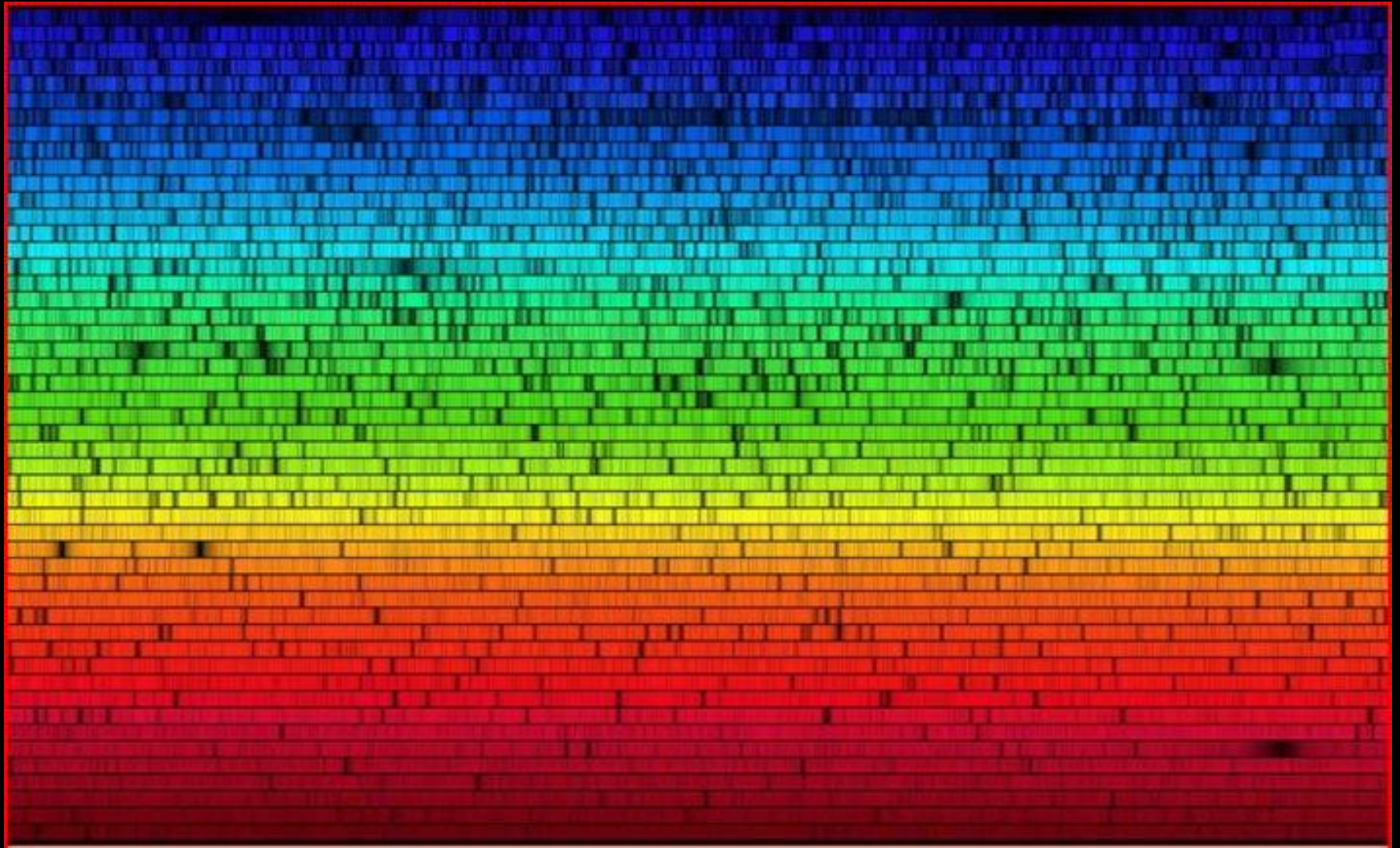
Simulated Spectrum of the Sun

Courtesy of Dr. John Beck

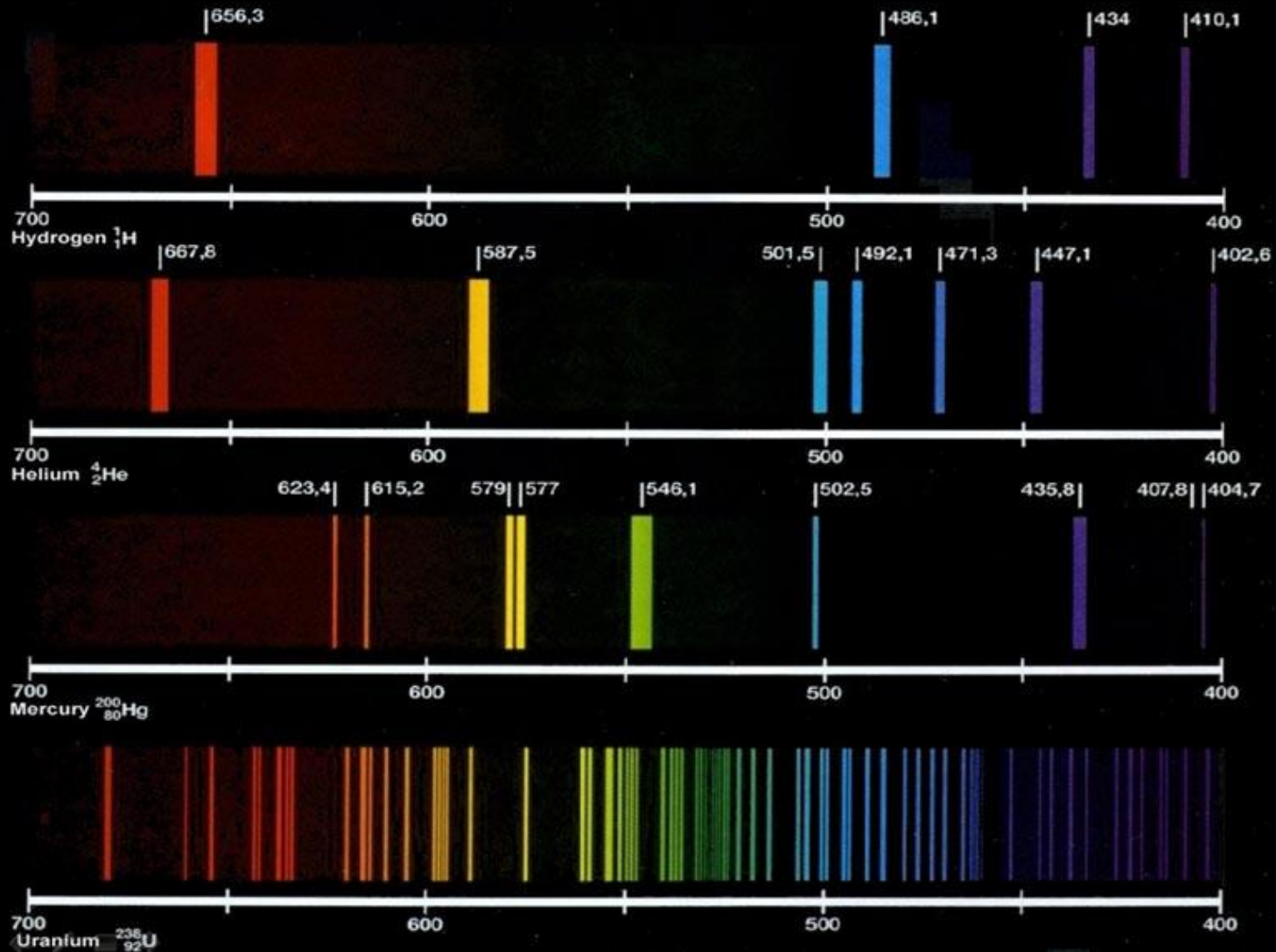
Determine Composition

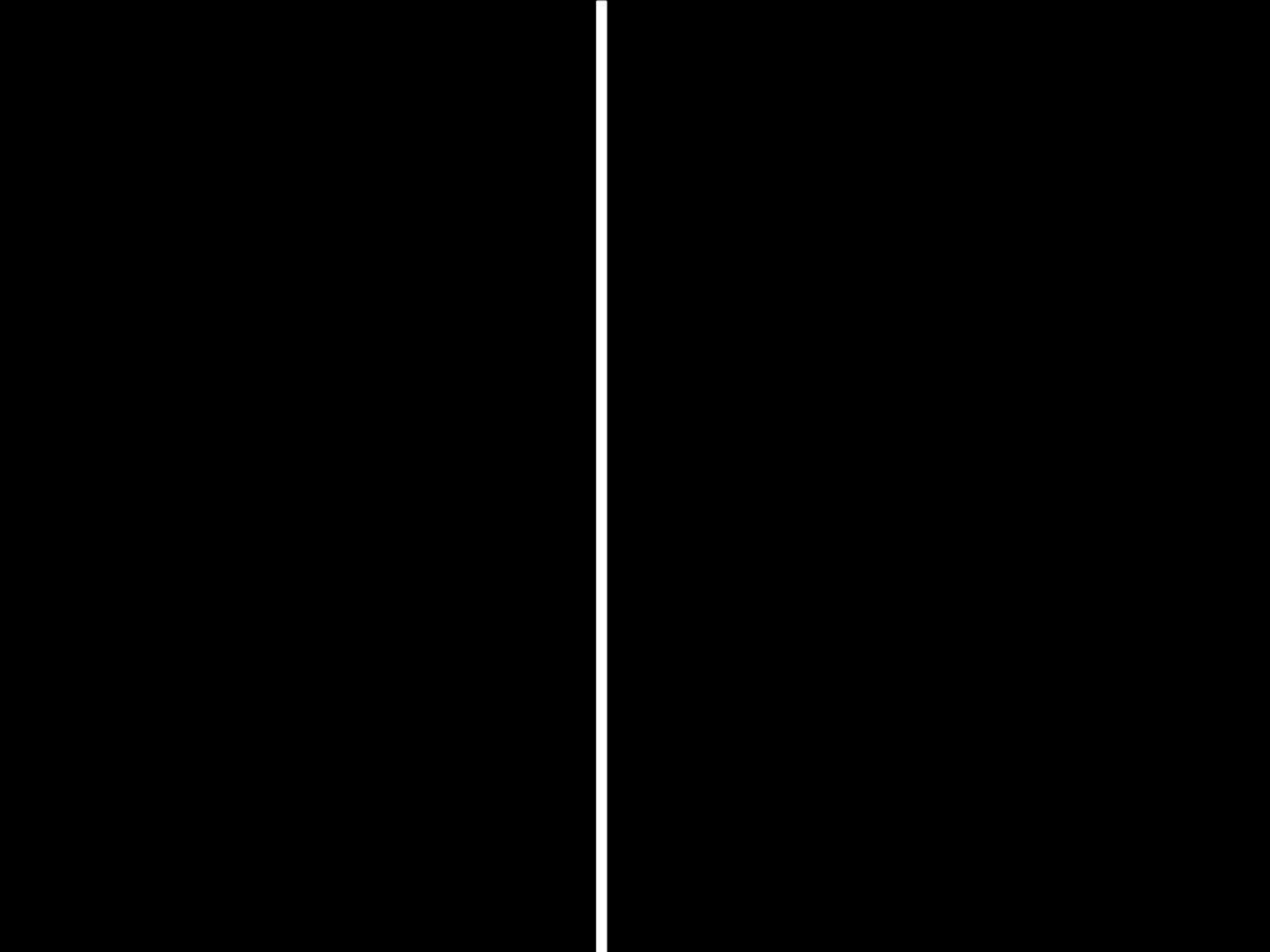


Determine Composition



Determine Composition

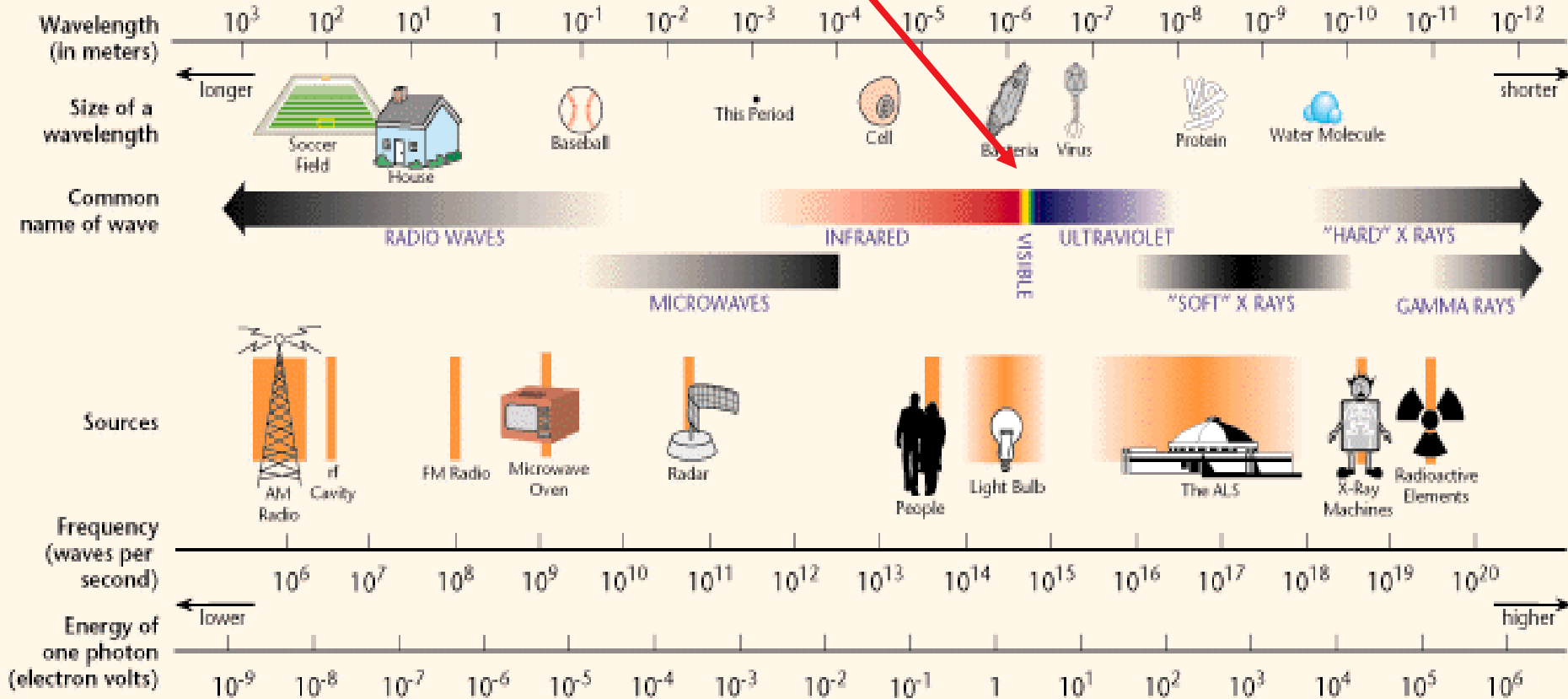




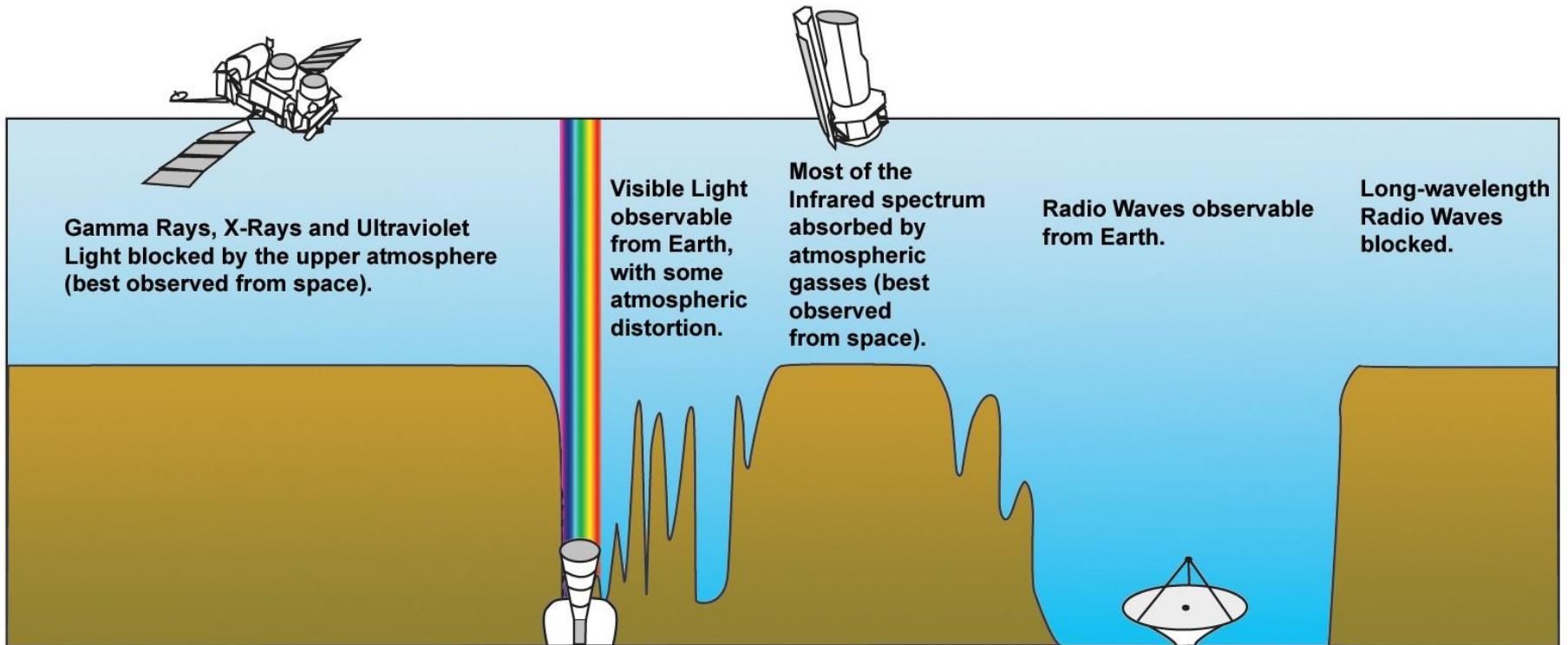
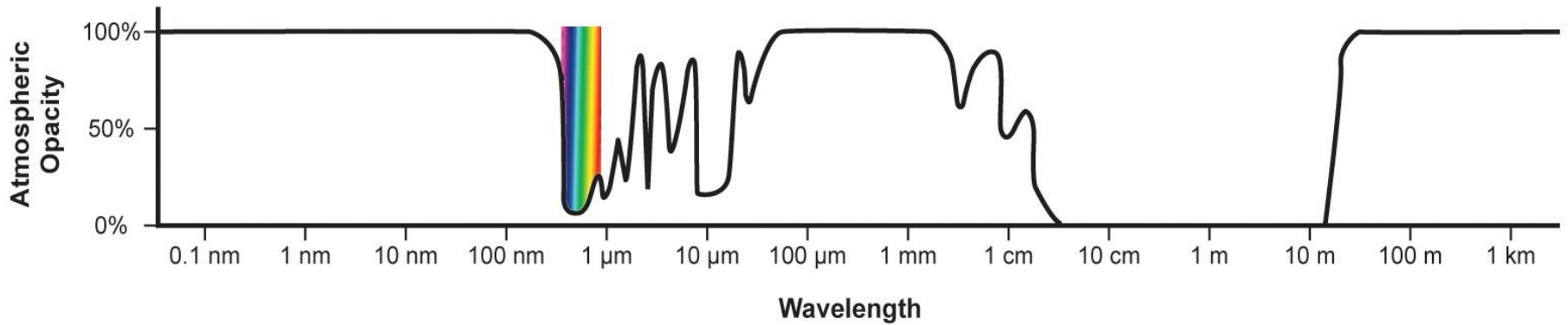
Invisible Light

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

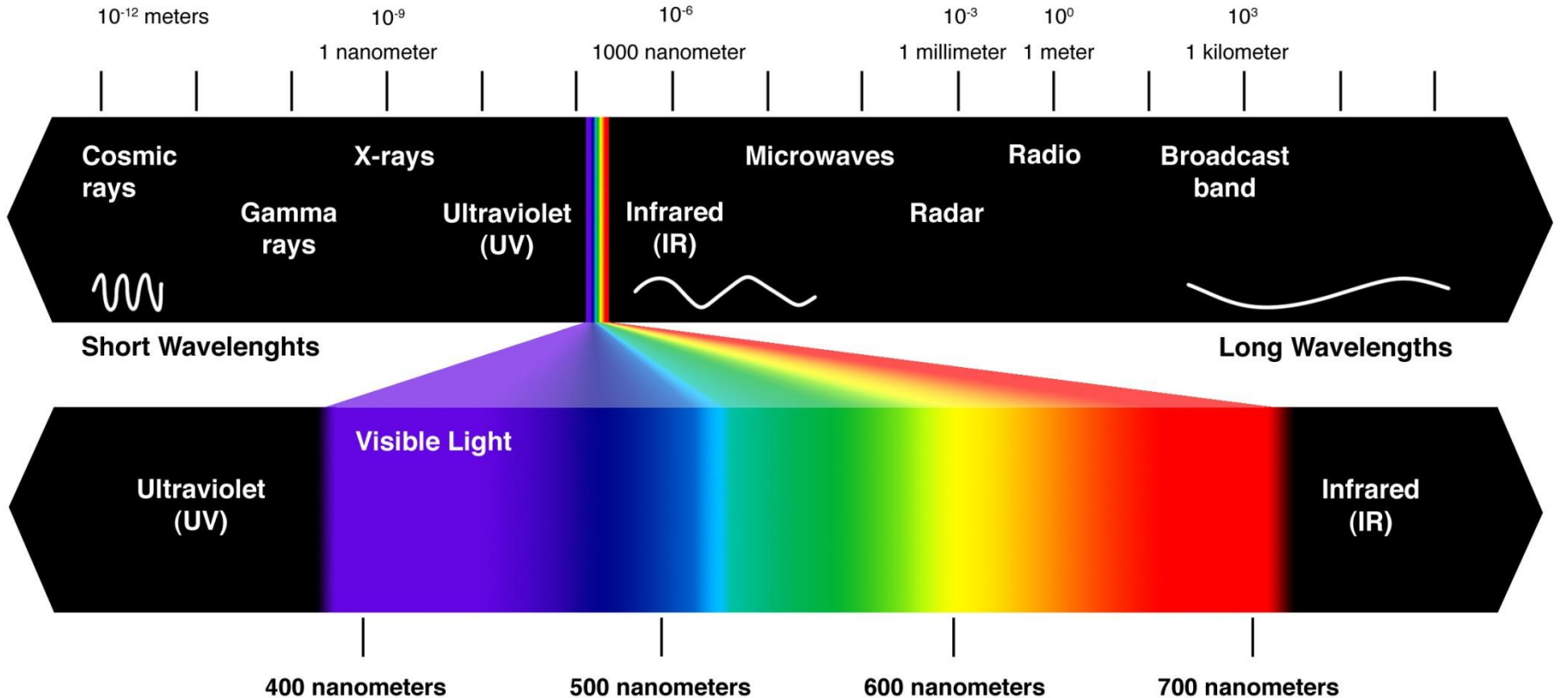
THE ELECTROMAGNETIC SPECTRUM



Atmospheric Absorption



The Electromagnetic Spectrum



Infrared Light



Infrared Light



Ultraviolet Light

Ultraviolet Light



Other Kinds of Light

Wilhelm Röntgen



Other Invisible Light



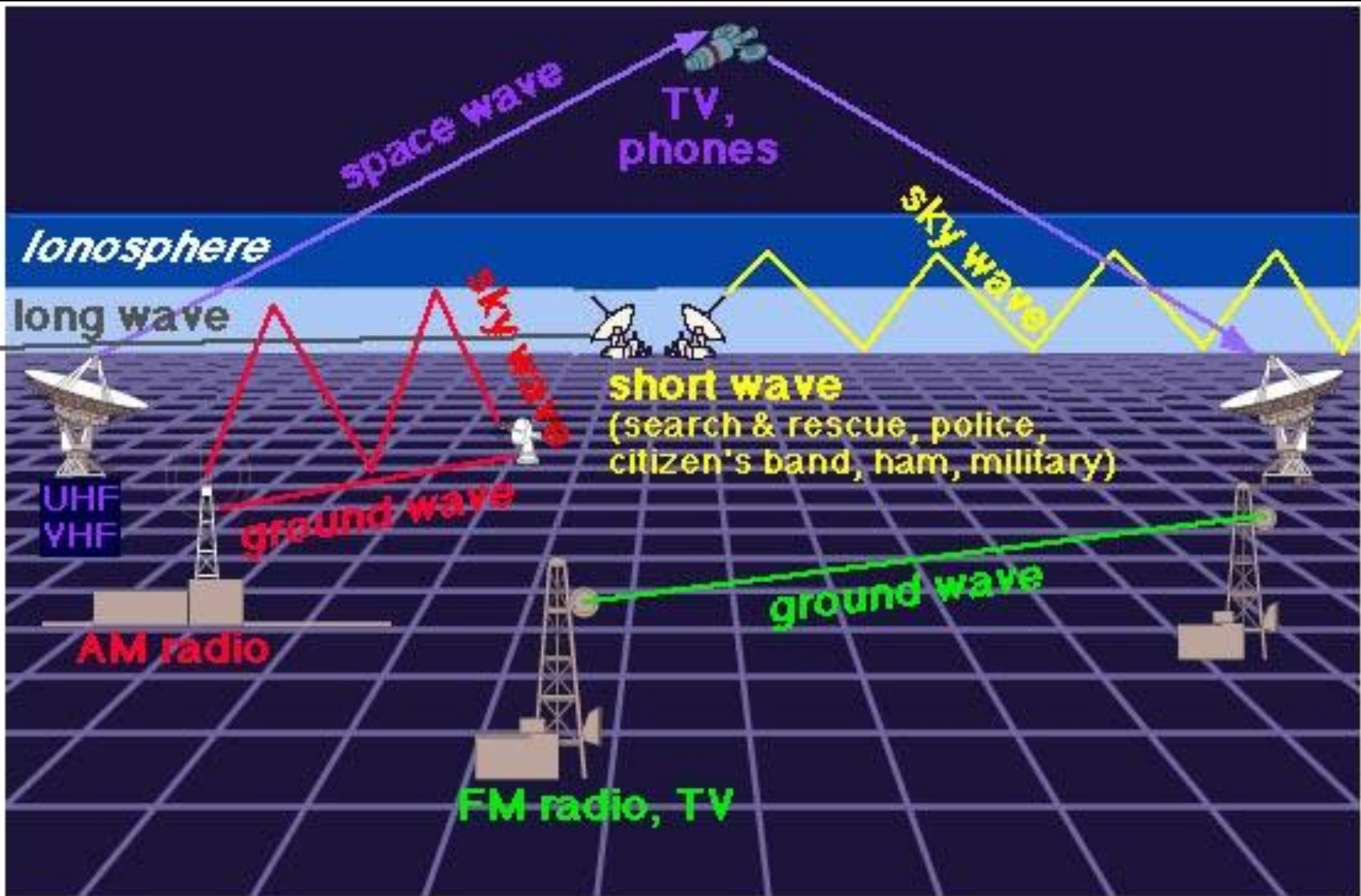
Guglielmo Marconi



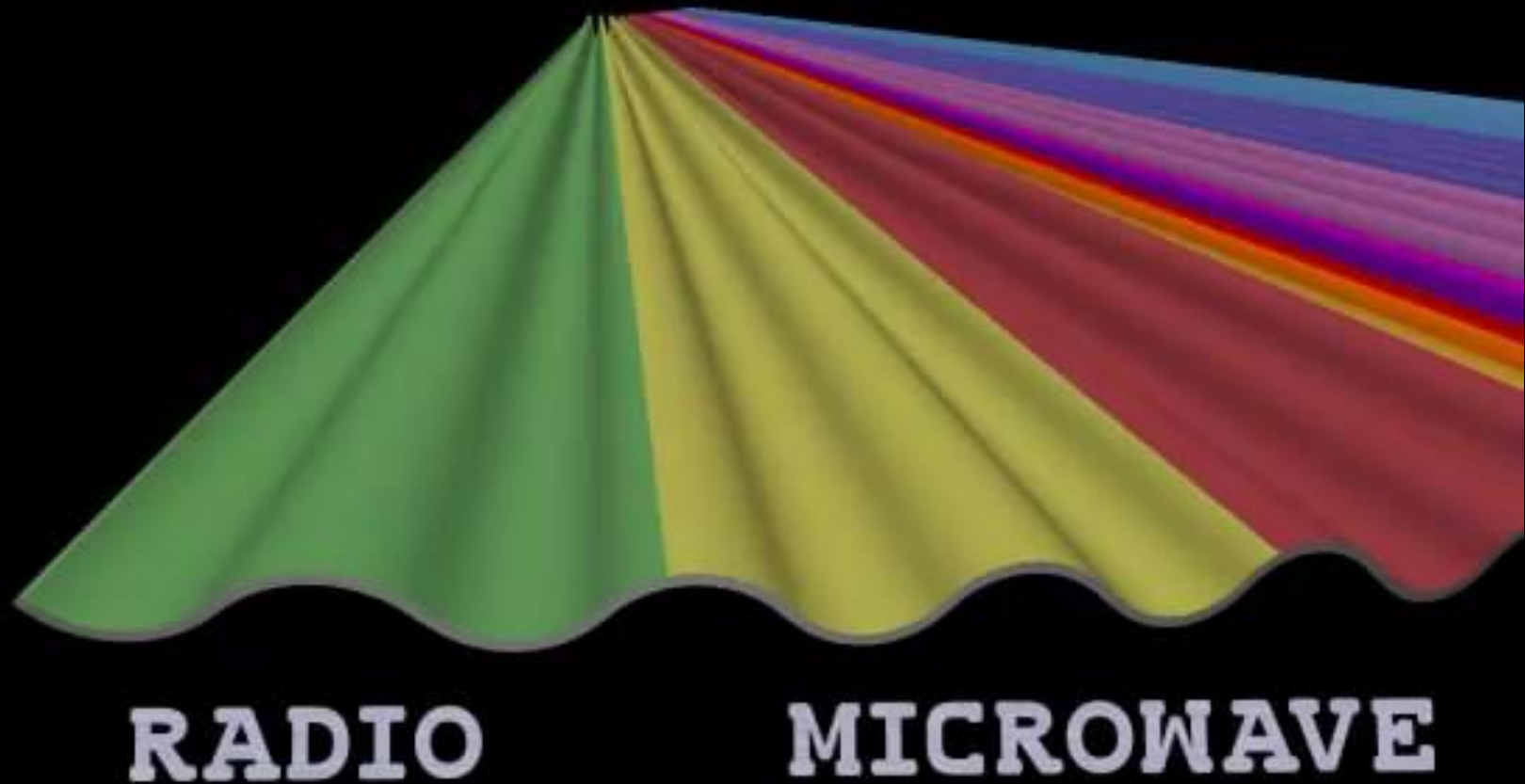
Radio Waves

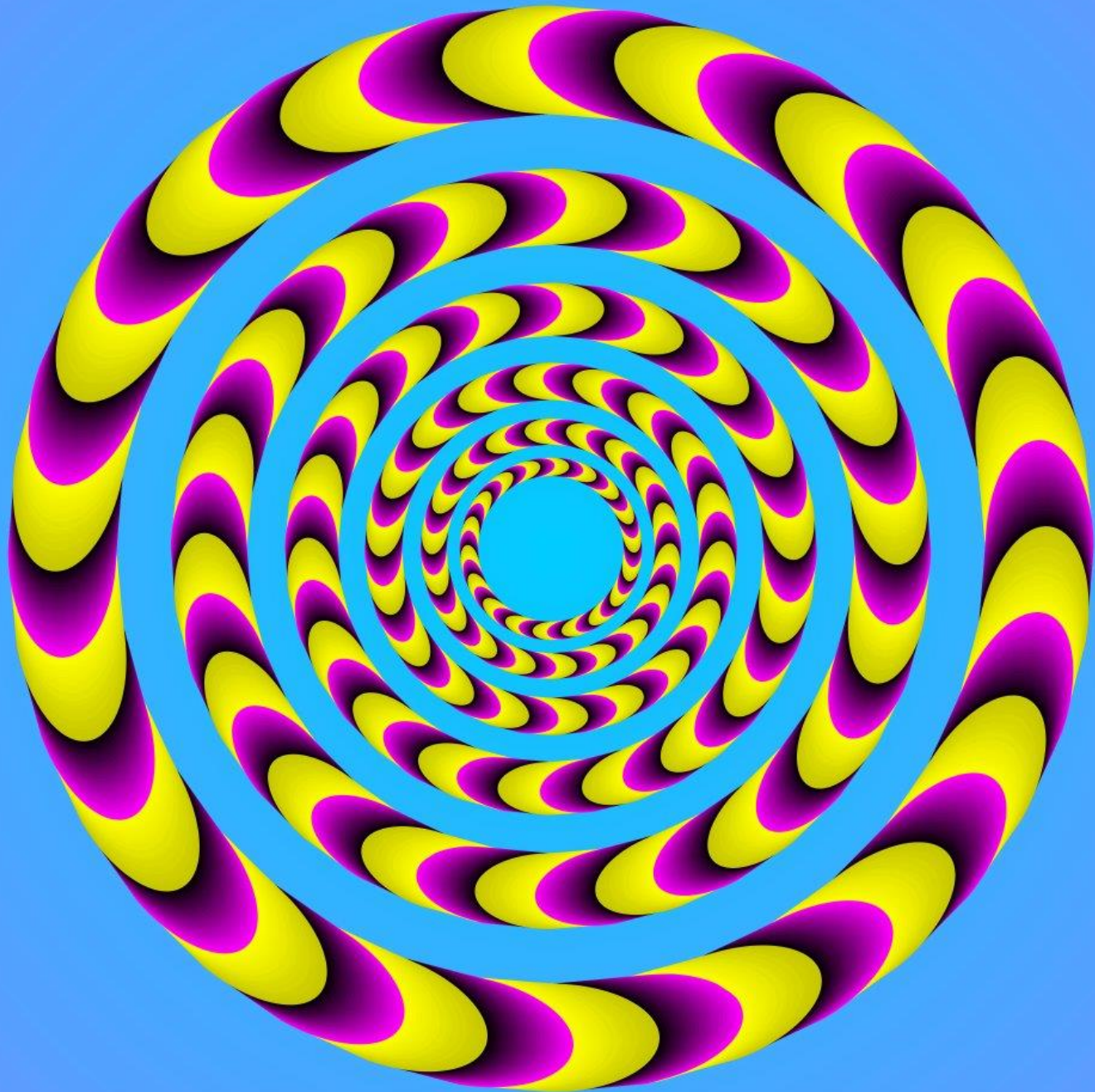


Radio Waves



The Electromagnetic Spectrum







Have a
COLORFULL
Day

Horsehead Nebula

Ewell Observatory