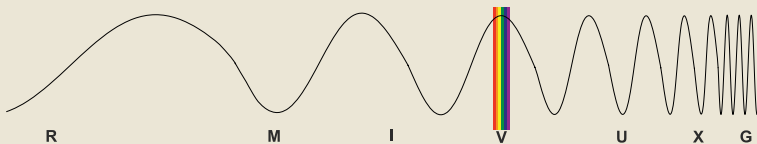


## KINDS OF LIGHT

Almost everything we know about the universe is from the light our telescopes detect. When we think of light we think of sunshine or the colors of the rainbow, but colors, like sounds, are limited by the range of our senses. Just as there are sounds that we cannot hear because the pitch is too high or low for our ears to detect, so there are colors whose color pitch is too high or low for our eyes to detect. What we think of as light, the visible colors of the rainbow, is just a tiny part what we call the Electromagnetic Spectrum.

Touch the wave below and move your finger along the wave from left to right. The letter key tells you which region of the spectrum you are touching. Radio waves have the longest wavelength and gamma rays have the shortest.

R = Radio waves  
M = Microwaves  
I = Infrared  
V = Visible light  
U = Ultraviolet  
X = X-rays  
G = Gamma rays



Adapted from the book Touch the Invisible Sky published by Ozone Publishing Corp. [www.ozonepublishing.net](http://www.ozonepublishing.net)

## WHERE IN THE UNIVERSE DOES LIGHT COME FROM?



**Radio waves** are the lowest energy form of light. Radio waves are generated by magnetic fields like those found in Sunspots, and by strong magnetic fields around black holes and neutron stars.



**Microwaves** are high energy radio waves radiated by clouds of cold gas between the stars. The leftover heat from the Big Bang leaves a glow of microwaves throughout the universe.



**Infrared light** we know as heat. It comes from giant clouds of dust, cool red stars and even planets. On Earth, it comes from anything that's warm, including living things, like you!



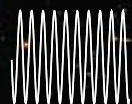
**Visible light** is a very narrow region of the spectrum. Hot objects like stars emit a lot of visible light. Our local star, the Sun, emits most of its light in the visible part of the spectrum. Reflections of visible light waves are the source of the color we can see.



**Ultraviolet light** is generated by very hot objects like stars. The hottest stars, which appear blue in visible light, radiate most of their light in the ultraviolet.



**X-rays** are emitted when temperatures reach millions of degrees and signify powerful events. Colliding galaxies, exploding stars (supernovas), and gas falling into black holes are sources of X-rays.



**Gamma rays** are the highest energy form of light. Gamma rays are generated by exploding stars and during the birth of black holes.