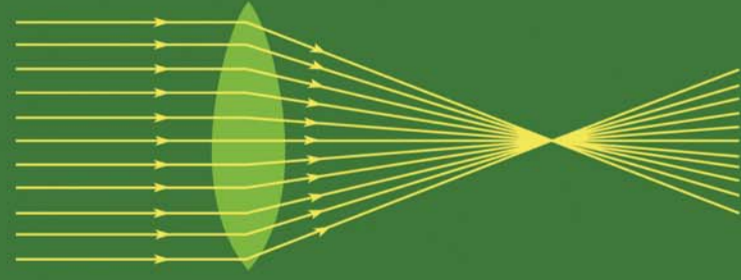


# LIGHT

## As a Ray



### What is Light?



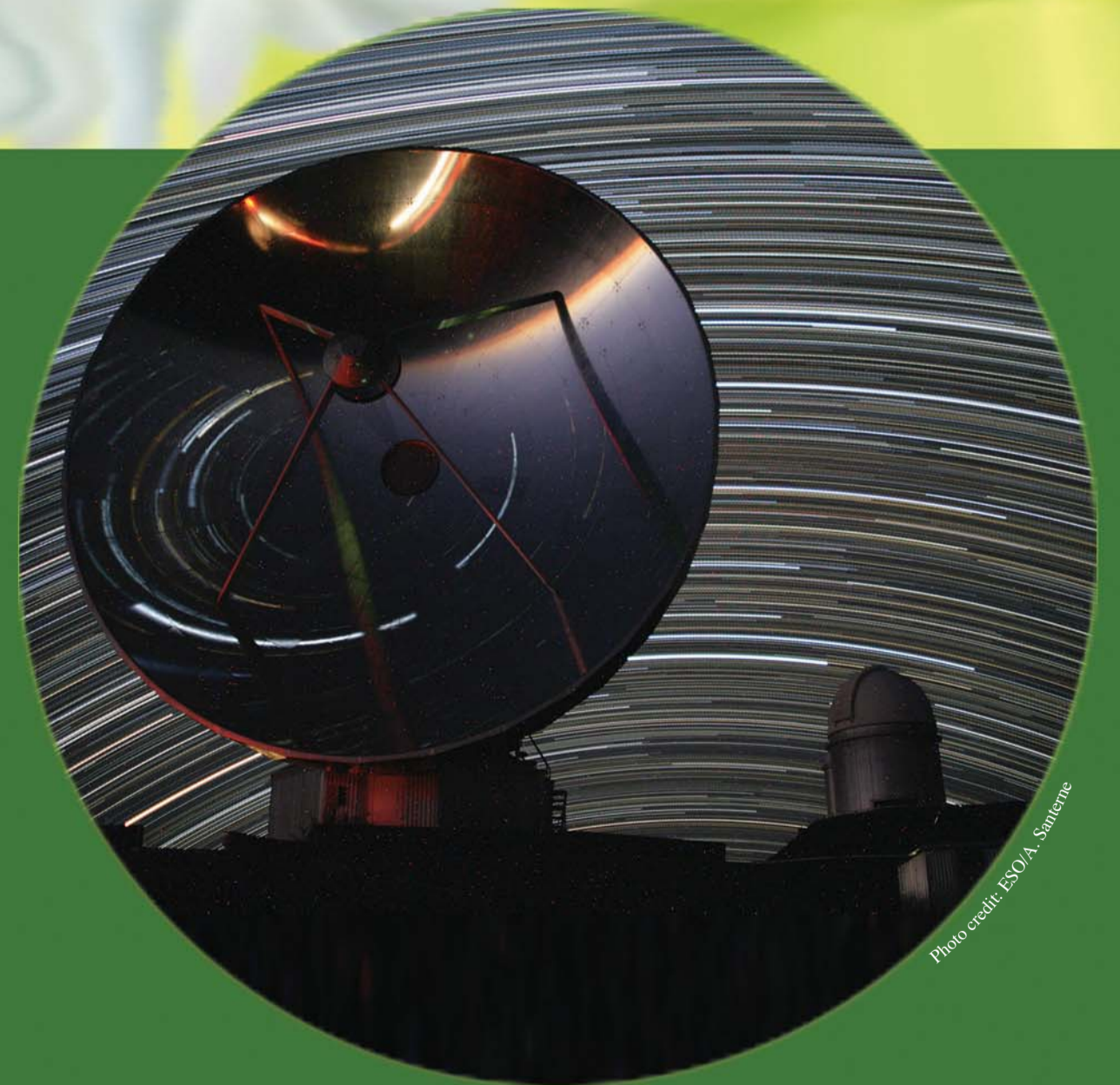
Light is part of the electromagnetic radiation spectrum, which is a form of energy. Light is usually considered to be the visible part of the spectrum; however, in physics, light is defined by all portions of the electromagnetic scale including invisible forms such as infrared, ultraviolet, x-rays, radio waves, and more.

Light energy can be described as a wave, a particle (or photon), or a combination of both (called the wave-particle duality). Another approach is to consider light energy as a ray. The observations of how light behaves with matter demonstrates the various properties as a wave, particle, or ray.

The unique properties of light are studied and utilized in the field of Optics and Photonics. Besides light enabling us to see, it cuts and welds, controls electrical circuits, transmits sound, and is used in a remarkable range of products and industries. Uses have expanded into areas that are critical to the health and quality of human life, and also the health of the entire planet. New discoveries in these fields open the door to addressing and solving the challenges of a modern world.

**Refraction** - A ray of light is a thin beam that travels in a straight line. Refraction is the phenomenon when light travels from one medium into another, such as through air into water, causing the ray to change speed and direction. Refraction can be observed through droplets of water, where the neighboring vegetation is miniaturized and reversed, or in light traveling through a water glass. A physical property of the medium, called refractive index, is related to these changes and used in the design of lenses and prisms.

**Reflection** - Reflection is when a ray of light strikes a surface and bounces back, or is reflected. The light bounces in a predictable way, which is described by the law of reflection. Because of reflection, you can see yourself in a mirror. In astronomy, mirrors are used in reflecting telescopes to visualize distant objects. Objects are visible because of the light reflected from their surfaces, such as the moon, and color is the result of certain wavelengths of light being absorbed while others are reflected.



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