

Cosmic Times 1965 Glossary

astronomical

Deals with Astronomy

astrophysics

The part of astronomy that deals principally with the physics of the universe, including luminosity, density, temperature, and the chemical composition of stars, galaxies, and the interstellar medium.

bandwidths

The range of signal frequencies that can be carried on a communications channel.

black body radiation

Black body radiation is produced by an object that is a perfect absorber of heat. Perfect absorbers must also be perfect radiators. For a blackbody at a temperature T, the intensity of radiation emitted I at a particular energy E is given by Planck's law:

$$I(E,T) = 2 E^3 [h^2 c^2 (e^{E/kT} - 1)]^{-1}$$

where h is Planck's constant, k is Boltzmann's constant, and c is the the speed of light.

celestial

Relating to the sky or the heavens.

coma

The nebulous envelope around the nucleus of a comet.

cosmology

The astrophysical study of the history, structure, and dynamics of the universe.

cosmic ray

Atomic nuclei (mostly protons) and electrons that are observed to strike the Earth's atmosphere with exceedingly high energies.

culminating

Coming to completion.

Cygnus A

A radio source in the constellation Cygnus in the Northern Hemisphere.

electromagnetic spectrum

The full range of frequencies, from radio waves to gamma rays, that characterizes light.

emission

The production of light, or more generally, electromagnetic radiation by an atom or other object.

fledgling

New or inexperienced.

fluorescing

The emission of electromagnetic radiation (especially visible light), stimulated by the absorption of incident radiation and lasting only as long as the incident radiation is continued.

galaxy

A component of our universe made up of gas and a large number (usually more than a million) of stars held together by gravity. When capitalized, Galaxy refers to our own Milky Way Galaxy.

Holmdel Horn

Radio antenna located in Holmdel, NJ used by Penzias and Wilson when they came across the cosmic microwave background radiation. The Horn Antenna is a National Historic Landmark.

infrared

Electromagnetic radiation at wavelengths longer than the red end of visible light and shorter than microwaves (roughly between 1 and 100 microns). Almost none of the infrared portion of the electromagnetic spectrum can reach the surface of the Earth, although some portions can be observed by high-altitude aircraft (such as the Kuiper Observatory) or telescopes on high mountaintops (such as the peak of Mauna Kea in Hawaii).

luminosity

The rate at which a star or other object emits energy, usually in the form of electromagnetic radiation.

magnitude

The degree of brightness of a celestial body designated on a numerical scale, on which the brightest star has magnitude -1.4 and the faintest star visible without a telescope has magnitude 6. A decrease of one magnitude represents an increase in apparent brightness by a factor of 2.512; also called apparent magnitude.

microwave

Electromagnetic radiation that has a longer wavelength (between 1 mm and 30 cm) than visible light. Microwaves can be used to study the Universe, communicate with satellites in Earth orbit, and cook popcorn.

NGC 3521

A spiral galaxy in the constellation Leo.

NGC 972

A spiral galaxy in the constellation Ares.

oscillating

Swinging to and from a position.

oscillating universe

A theory stating that the gravitational attraction of the mass within the universe will eventually slow down and stop the expansion of the universe eventually resulting in a 'Big Crunch' where all the matter in the universe will be contracted into a small volume of high density.

photographic plates

Early photography used a light-sensitive emulsion of silver salts applied to a glass plate.

primordial

Primordial matter refers to the matter in the universe that was first formed, and has been in existence since the existence of the universe itself.

quasar

An enormously bright object at the edge of our universe which emits massive amounts of energy. In an optical telescope, they appear point-like, similar to stars, from which they derive their name (quasar = quasi-stellar). Current theories hold that quasars are one type of AGN.

remnant

Left over; a surviving trace or vestige.

radiation

Energy emitted in the form of waves (light) or particles (photons).

Scorpius

A constellation named "the Scorpion," located in the Southern Hemisphere near Libra and Sagittarius. It contains the bright red star Antares.

spectrum (pl. spectra)

A plot of the intensity of light at different frequencies. Or the distribution of wavelengths and frequencies.

spherical galaxy

A galaxy that has a shape similar to a sphere.

Steady State Universe Model

Model designed by Fred Hoyle and others wherein new material is created as the universe expands.

telecommunications

The system by which auditory and visual information is transmitted by television, radio, or phone.

wavelength

The distance between adjacent peaks in a series of periodic waves. Also see electromagnetic spectrum.

X-rays

Electromagnetic radiation of very short wavelength and very high-energy; X-rays have shorter wavelengths than ultraviolet light but longer wavelengths than gamma rays.

zenith

the zenith at a given point is the local vertical direction pointing away from the direction of the force of gravity at that location.