

Definition: **Milky Way** from *Philip's Encyclopedia*

Faint band of light visible on clear dark nights encircling the sky along the line of the galactic equator. It is the combined light of an enormous number of stars, in places obscured by clouds of interstellar gas and dust. It is in fact the disc of our galaxy, viewed from our vantage point within it.

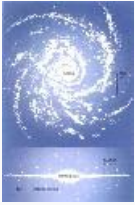


Image from: [galaxy A general outline for the structure of a... in Astronomy Encyclopedia](#)

#### Summary Article: **Milky Way**

From *The Columbia Encyclopedia*

the galaxy of which the sun and solar system are a part, seen as a broad band of light arching across the night sky from horizon to horizon; if not blocked by the horizon, it would be seen as a circle around the entire sky. Although its motion is not readily apparent, the entire galaxy is rotating about the Milky Way's center. Relative to the universe, the galaxy is moving at a speed of c.370 mi per sec (c.590 km per sec) in the same direction that the constellation Leo lies relative to the earth; it is also moving at c.60 mi per sec (c.100 km per sec) relative to the center of mass of the Local Group of galaxies. The sun, traveling at a speed of c.150 mi per sec (c.240 km per sec) in a nearly circular orbit, takes some 230 million years to complete one revolution.

### Visual Characteristics of the Milky Way

Among the constellations the Milky Way passes through are Carina, Crux (the Southern Cross), Sagittarius (where it is brightest), Scorpius, Aquila, Cygnus, Perseus, Cassiopeia, Auriga, and Gemini. In the direction of Cygnus is the Great Rift, a band of dark matter that lies along the Milky Way, dividing it into two forks. Another dark region is the Coalsack, in Crux. Once believed to be vast empty regions in space, these dark areas are now known to be clouds of dark matter blotting out the light behind them. Such nonluminous clouds of dust and gas, called dark nebulae, obscure many parts of the sky from sight; in the direction of the galactic center, the view is almost entirely obscured.

### Size and Shape of the Milky Way

The Milky Way is a large barred spiral galaxy comprising an estimated 200 billion stars (some estimates range as high as 400 billion) arrayed in the form of a disk, with a central elliptical bulge (some 12,000 light-years in diameter) of closely packed stars lying in the direction of Sagittarius. It is surrounded by a flat disk marked by six spiral arms that project from a dense, elongated concentration of stars, or bar, that runs through the bulge—four major and two minor—which wind out from the nucleus like a giant pinwheel. Our sun is situated in one of the smaller arms, called the Local or Orion Arm, that connect the more substantial next inner arm and the next outer arm. The sun lies roughly 27,000 light-years from the center of the galaxy, and in the galactic plane. When we look in the plane of the disk we see the combined light of its stars as the Milky Way. The diameter of the disk is c.100,000 light-years; its average thickness is 10,000 light-years, increasing to 30,000 light-years at the nucleus.

Certain features of the region near the sun suggested that our galaxy resembles the Andromeda Galaxy. In 1951 a group led by William Morgan detected evidence of spiral arms in Orion and Perseus. Another bright arm stretches from Sagittarius to Carina in the southern sky. With the development of

radio astronomy, scientists have extended a nearly complete map of the spiral structure of the galaxy by tracing regions of hydrogen that dominate the spiral arms. The development of telescopes that could be placed in orbit led by 2005 to confirmation that the Milky Way was a barred spiral galaxy, not a spiral one as had been believed.

Surrounding the galaxy is a large spherical halo of globular star clusters that extends to a diameter of about 130,000 light-years; this is called the stellar halo. The galaxy also has a vast outer spherical region called the corona, or dark halo, which is as much as 600,000 light years in diameter and, in addition to dark matter which accounts for most of the Milky Way's mass, includes some distant globular clusters, the two nearby galaxies called the Magellanic clouds, and four smaller galaxies.

## **Stellar Populations and Galactic Evolution**

The stars, gas, and dust that make up the Milky Way can be grouped into two broad stellar populations that suggest how the galaxy evolved. The spiral arms and central plane of the Milky Way contain the interstellar gas, cosmic dust, and bright young stars categorized as Population I. The halo, spaces between the spiral arms, and central core of the galaxy contain the older, less spectacular stars that are categorized as Population II. This distribution can be explained by an evolutionary model in which an enormous cloud of gas and dust began to condense to form what are now Population II stars. The remaining gas and dust then collapsed, either suddenly or in stages, into the relatively thin disk in which Population I stars were (and still are being) formed.

Like other galaxies, the Milky Way is growing by absorbing small satellite galaxies. It is currently merging with the Large and Small Magellanic Clouds, a process that will be completed in about 100 million years. In 2003 a previously unknown galaxy was found to be colliding with the Milky Way. Its distinctive red stars are slowly being pulled into the Milky Way, and the dwarf will soon lose all its structure. Called the Canis Major dwarf galaxy after the constellation in which it lies, it is about 25,000 light years away from the solar system and 42,000 light years from the center of the Milky Way. This is closer than the Sagittarius dwarf galaxy, discovered in 1994, which is also colliding with the Milky Way. Several other galaxies are also, apparently, on a collision course with the Milky Way. The biggest and most spectacular collision will be with the Andromeda Galaxy. In about 2 billion years, massive tidal gravitational effects will tear spiral arms apart and start to shred the pinwheels from the outside in. The result will be an elliptical rather than a spiral Milky Way.

## **Bibliography**

See E. J. Alfaro; A. J. Delgado, ed., *The Formation of the Milky Way* (1995);  
Vogt, G. L. , *The Milky Way* (2002).

**APA**

Chicago

Harvard

MLA

---

Milky Way. (2018). In P. Lagasse, & Columbia University, *The Columbia encyclopedia* (8th ed.). New York, NY: Columbia University Press. Retrieved from [https://search.credoreference.com/content/topic/milky\\_way](https://search.credoreference.com/content/topic/milky_way)



*The Columbia Encyclopedia, © Columbia University Press 2018*



*The Columbia Encyclopedia, © Columbia University Press 2018*

## APA

Milky Way. (2018). In P. Lagasse, & Columbia University, *The Columbia encyclopedia* (8th ed.). New York, NY: Columbia University Press. Retrieved from [https://search.credoreference.com/content/topic/milky\\_way](https://search.credoreference.com/content/topic/milky_way)

## Chicago

"Milky Way." In *The Columbia Encyclopedia*, by Paul Lagasse, and Columbia University. 8th ed. Columbia University Press, 2018. [https://search.credoreference.com/content/topic/milky\\_way](https://search.credoreference.com/content/topic/milky_way)

## Harvard

Milky Way. (2018). In P. Lagasse & Columbia University, *The Columbia encyclopedia*. (8th ed.). [Online]. New York: Columbia University Press. Available from: [https://search.credoreference.com/content/topic/milky\\_way](https://search.credoreference.com/content/topic/milky_way) [Accessed 13 November 2019].

## MLA

"Milky Way." *The Columbia Encyclopedia*, Paul Lagasse, and Columbia University, Columbia University Press, 8th edition, 2018. *Credo Reference*, [https://search.credoreference.com/content/topic/milky\\_way](https://search.credoreference.com/content/topic/milky_way). Accessed 13 Nov. 2019.