

The milky way galaxy



**ASSIGN
BUSTER**

The Milky Way Galaxy Our sun lies in the outer reaches of a galaxy that contains over 200 billion stars and is known as the Milky Way Galaxy. Our galaxy was formed soon after the big bang event as the universe began to cool, matter was formed, and dust began to collect. The Milky Way is believed to have taken shape when several smaller systems merged billions of years ago. At this early stage of development, the galaxy was an irregular shaped mass containing stars, gas, and dust. As stars formed during this period, the gas and dust fell to the galactic plane, while older stars were left behind. The new stars that formed inherited the rotational characteristics of the galaxy and it became more circular and ordered as we see it today.

The Milky Way we see today is known as a spiral galaxy due to its shape, a flattened disc that bulges in the center. Arms of concentrated matter swirl out from the bulge giving it its spiral appearance. Between the arms of matter are dust lanes, which gives the area a vacant look. The diameter of the disc is approximately 100, 000 light years across while the thickness of the disc is only 2, 000 light years. The center bulge reaches out to a thickness of about 6, 000 light years. The galaxy itself has a well-ordered motion revolving around the galactic center and is surrounded by the galactic halo. The halo is made up of faint older stars that meander randomly, engulfing the galaxy.

The galaxy's spiral arms are formed as the galaxy spins and density waves move through the collection of stars and gas. The waves compress different parts of the disc at different times and give it the characteristic spiral shape. These spiral arms rotate around the center bulge where most of the matter is contained, and as the galaxy spins it maintains its shape through the rotational movement and gravity. The stars and globular clusters in the halo

that surround the main portion of the galaxy give it an overall spherical shape.

The discovery of the Milky Way is a relatively recent event for astronomers and is continuing to evolve. Eighteenth century English astronomer William Herschel grasped the concept of the galaxy and mapped the galaxy by counting visible stars. In the early 20th century, Harlow Shapley's observations reshaped our picture of the galaxy. He observed the globular clusters residing in the outermost regions of the galaxy and helped in our understanding of the true size of the Milky Way. More recent optical, infrared, and radio observations have given us a much clearer picture of our galaxy. Still, there are limitations to the technology due to the vastness of the space and the concentrations of matter that can't be penetrated. Our picture of the galaxy is continuing to change and the Milky Way is still being discovered.

New observation techniques have unmasked countless galaxies in the universe. Though our galaxy is about the average size of other spiral galaxies, it is far from average. Galaxies come in a variety of shapes from highly organized spirals with two thin arms to irregularly shaped and disorganized clouds. Two well-known galaxies, the small and large Magellenic Clouds, are irregular shaped galaxies that orbit the Milky Way. The nearby galaxy Andromeda is a barbed spiral that lies only 2.5 million light years away. It is similar to the Milky Way, but has an elongated central bar of stars and gas protruding from the center bulge. While the Milky Way is rather quiet, some active galaxies emit tremendous amounts of

radiomagnetic energy. One such galaxy is Malin 1, which is many times the size of the Milky Way. The distance of 800 million light years away produces

<https://assignbuster.com/the-milky-way-galaxy/>

a glow so faint that it was only recently discovered.

References

Chaisson, Eric, and Steve McMillan. *Astronomy: A Beginners Guide to the Universe*. Upper Saddle River, NJ: Pearson Education, 2004