



HEAVENLY NEWS

“The Whirlpool Galaxy”

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In the previous “Heavenly News” column, Forrest Lockhart wrote about **Galaxies** in general. This week, let’s explore one of the most famous galaxies commonly known as the **Whirlpool Galaxy**, also known as Messier 51, M51, or New General Catalog 5194 (NGC 5194). Located 23 million light-years away in the constellation Canes Venatici (the Hunting Dogs), the Whirlpool’s beautiful face-on view and closeness to Earth allow astronomers to study a classic spiral galaxy’s structure and star-forming processes.

The Whirlpool Galaxy was discovered in 1773 by the famous French Astronomer, Charles Messier (hence the names “Messier 51” or “M51”). It has the distinction of being the first galaxy discovered with a spiral form. However, when it was first observed it was thought to be a nearby nebula that was a solar system being formed in our galaxy. It was not until about the 1920’s most astronomers finally realized such objects were actually distant galaxies. The Whirlpool is about 23 million light-years away, has a total mass of about 160 billion suns, and a diameter of about 100,000 light-years. It is about the equal of the great Andromeda Galaxy in size, although the Andromeda Galaxy appears larger to us because it is closer.

The Whirlpool Galaxy is the brightest galaxy in the M51 Group, a small group of galaxies that also includes M63 (the Sunflower Galaxy), NGC 5023, and NGC 5229. This small group may actually be a sub-clump at the southeast end of a large, elongated group that includes the M101 Group and the NGC 5866 Group, although most group identification methods and catalogs identify the three groups as separate entities.

The Whirlpool’s most striking feature is its two curving arms, a hallmark of so-called grand design spiral galaxies. A grand design spiral galaxy is a type of spiral galaxy with prominent and well-defined spiral arms. Many spiral galaxies possess numerous, loosely shaped arms that make their spiral structure less pronounced. These arms serve an

important purpose in spiral galaxies. They are star-formation factories, compressing hydrogen gas and creating clusters of new stars. In the Whirlpool Galaxy, the assembly line begins with the dark clouds of gas on the inner edge, then moves to bright pink star-forming regions, and ends with the brilliant blue star clusters along the outer edge.

Some astronomers believe the Whirlpool's arms are so prominent because of the effects of a close encounter with NGC 5195, the small, yellowish galaxy at the outermost tip of one of the Whirlpool's arms. At first glance, the compact galaxy appears to be tugging on the arm. The Hubble Telescope's clear view from outer space, however, shows that NGC 5195 is passing behind the Whirlpool. This small galaxy has been gliding past the Whirlpool for hundreds of millions of years.

The Whirlpool and its companion galaxy, NGC 5195, are easily observed by amateur astronomers and on a clear, dark night, the two galaxies may even be seen with binoculars. It is also a popular target for professional astronomers, who study it to further understanding of galaxy structure (particularly structure associated with the spiral arms) and galaxy interactions.

The Whirlpool Galaxy is easy to find by following the easternmost star of the Big Dipper (Eta Ursae Majoris) and going 3.5° southeast. Or you can simply visit the CPRC Community Observatory where trained docents will show you spectacular views of M51 on one of two 14 inch reflector telescopes. The Whirlpool Galaxy and its companion NGC 5195 are also showcased on the Observatory's poster (photo taken by Ken Crawford). These unique **Whirlpool Galaxy Posters** are given to you upon receipt of a \$10 donation to the observatory. The observatory is located behind the El Dorado Center at Folsom Lake College off Green Valley Road in Placerville and is open most Friday, Saturday and Sunday evenings (closed in poor weather and on major holidays). For more information, closure notices and driving directions go to www.communityobservatory.com.