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Pinwheel galaxy discovered by Méchain

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The Pinwheel galaxies' spiral arms give it its name.

Carlos Rotellar

We are entering the galaxy season in which the earth position gives us the best views of constellations that contain many galaxies. To the right we can see the Big Dipper in the constellation Ursa Major surrounded by a number of galaxies. During this time of the year the Big Dipper can easily be seen in the north east after dark, as it rotates to the west around the North Star (Polaris).

This month we discuss the Pinwheel Galaxy located in the constellation Ursa Major at a distance of 22 million light years, with a diameter of 170,000 light years. This is almost twice the size of the Milky Way. It was discovered by Pierre Méchain in 1781 and was included, by Charles Messier, in his catalog of celestial objects as M 101.

In the image we can see M 101 face on, with its spiral arms, which give this galaxy its name. It contains more than a trillion stars and there are more than 3,000 starbirth regions in its spiral arms, seen as purple dots in the image. The small bulge in the center has a mass that is 3 billion times the mass of our sun and it does not contain a super massive black hole. Instead its spiral arms contain a large quantity of “stellar-mass black holes” which are formed by the gravitational collapse of a single star or the merge of two neutron stars.



When massive stars undergo supernova explosions they leave behind ultra-dense cores called neutron stars, and when two of them merge they collapse into a black hole. These black holes have a mass of 3 to 50 times the mass of our sun; while supermassive black holes, that usually are located in the center of galaxies, have a mass of several billion times the mass of our sun. Scientists think supermassive black holes are formed at the same time a galaxy is created.

The Pinwheel Galaxy is racing away from the sun at speed of 539 mph.