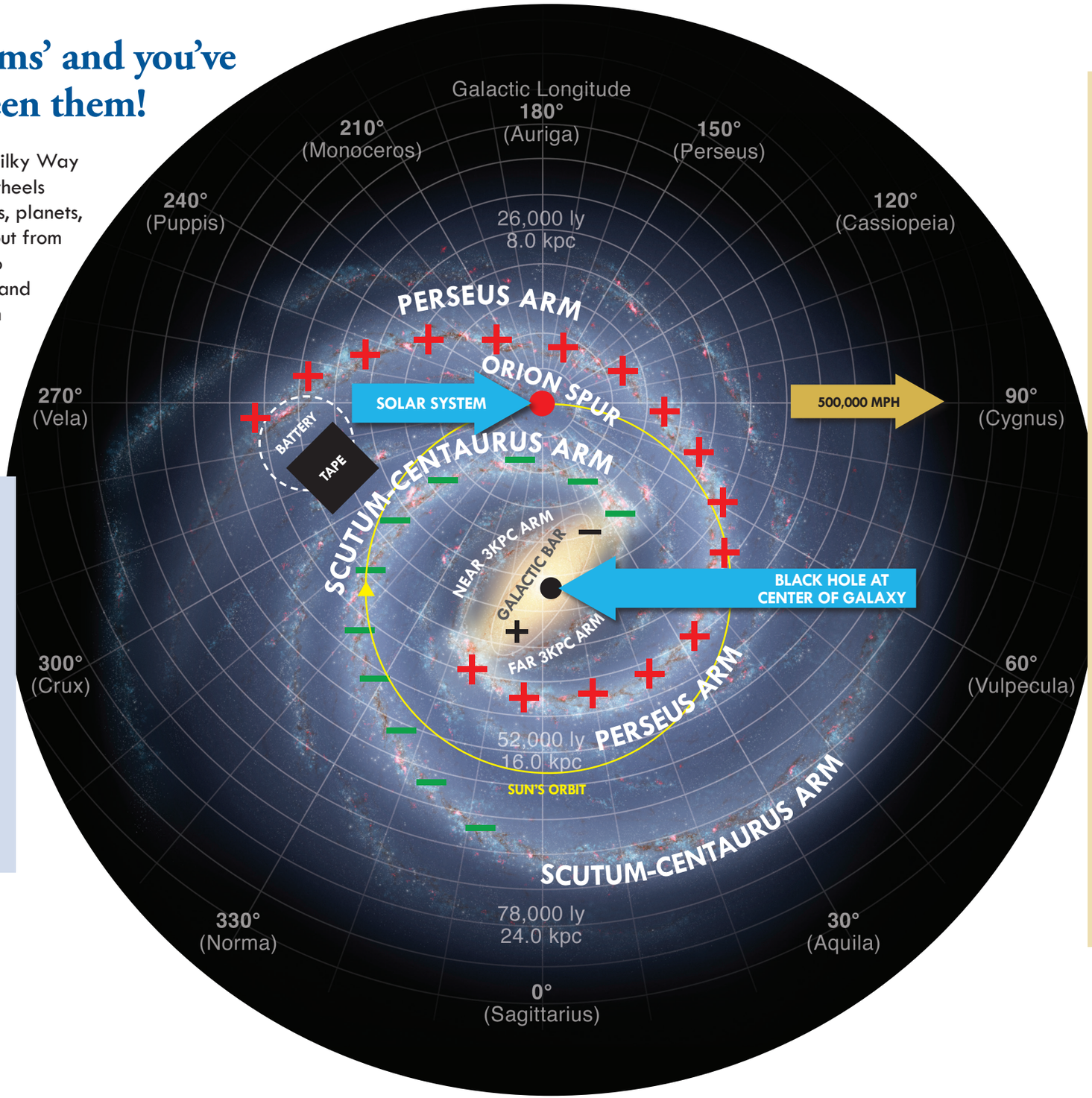
The Milky Way has 'arms' and you've probably never even seen them!

Many don't realize that galaxies like the Milky Way actually have "spiral arms." These are pinwheels within the galaxy that are made up of stars, planets, asteroids and hydrogen clouds that reach out from the center of the galaxy to its edges. Radio astronomers use huge telescopes to understand the motions of those hydrogen clouds, which trace the arms. Our planet is between two main arms: the Perseus arm and the Scutum-Centaurus arm. It's not easy to see these galaxy arms, so astronomers use electronics to observe their motion.

Fun Facts

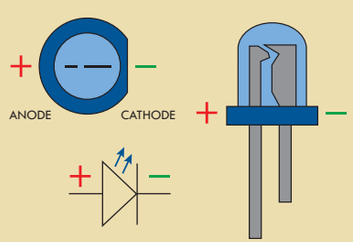
- Our galactic address might be written as:
  Earth
  Solar System
  Orion Spur
  Milky Way
- The Milky Way is so big it takes light 150,000 years to cross it from edge to edge. LIGHT!, which we think of moving in the blink of an eye!
- Earth is roughly 26,000 lightyears away from the center of the Milky Way on the edge of a spiral arm called the Orion-spur.



Build a Circuit to Light the Positions of our Planet and the Milky Way's Center

DIRECTIONS:

1. Cover the (+) marks with gold tape in one line, making your own spiral arm.
2. Also cover the (−) marks with gold tape in the same manner.
3. Spread the legs of two LEDs and bend them to put the long leg on the Perseus Arm. Attach with gold tape, center one LED on the red dot indicated with the words "Solar System" and the other one on the spot marked "Black Hole."
4. Attach the short legs to the Scutum-Centaurus Arm.
5. Attach big side (+) of battery down on end of Perseus Arm with electrical tape.
6. Connect negative (−) side of battery to Scutum-Centaurus Arm, with gold tape, over the electrical tape.
7. Press the battery and the LEDs should light!



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Completed Craft Lights Up!

The Milky Way Galaxy is immense. It is 150,000 light-years in diameter. Our Solar System resides roughly 26,000 light-years away from the Galactic Center.

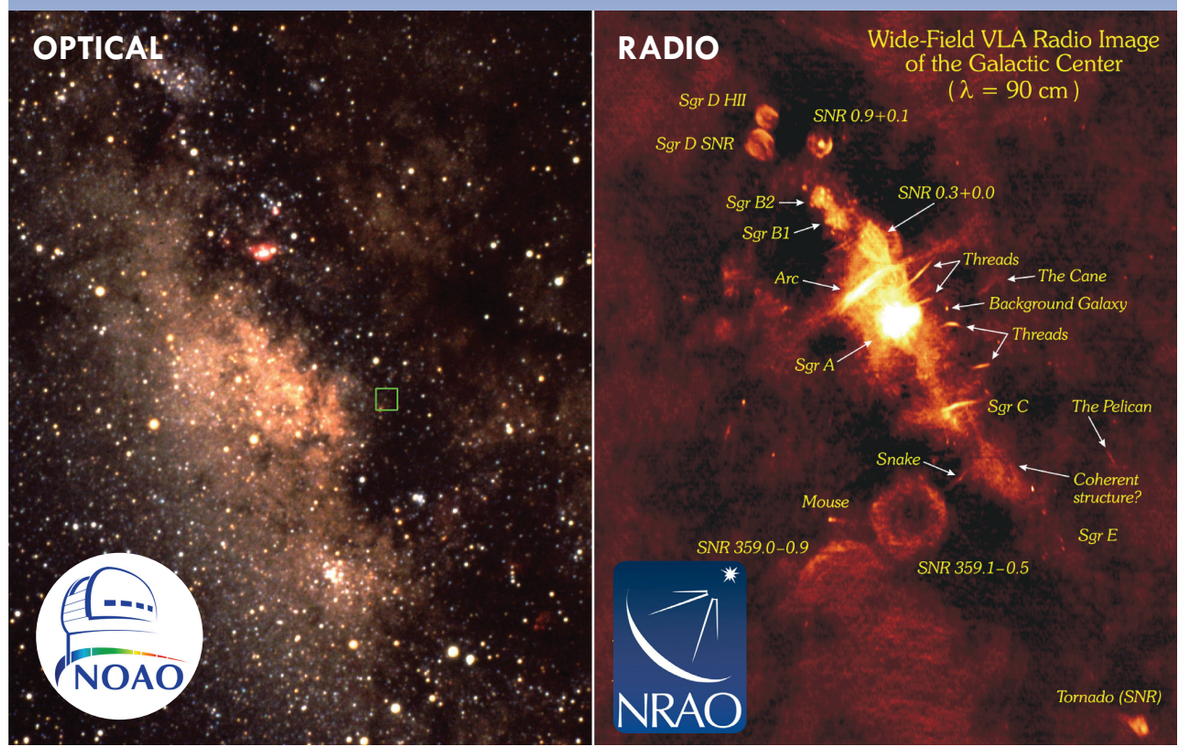
Our Milky Way galaxy has spiral arms, where stars are born from clouds of molecular gas and shine for billions of years. The exact number of arms, and their shapes, is difficult to determine from our location within the Milky Way. Astronomers think the Milky Way has 4 main spiral arms and a number of fragments of arms, called spurs.

Our solar system is moving around the center of the Milky Way at the incredible speed of 500,000 miles per hour. Even at that rate, it takes 240 million years to go around once.

The Milky Way has around 200 billion stars. When you look out at night, you can see only about 2,500 stars.

Astronomers have many ways to observe our galaxy. Optical telescopes see visible light in the galaxy – similar to how our eyes work. Radio telescopes "listen" for radio waves from distant celestial objects. Both visible light and radio waves are part of the "electromagnetic spectrum," which also includes X-rays, ultraviolet light, microwaves, and other types of radiation. Astronomers have other tools to observe the galaxy in those bandwidths, too.

Optical and Radio Telescopes see different features of our galaxy. Compare two views of the center of the Milky Way.



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