

## A unique happening in the sky

Stargazers willing to brave the cold and stay up until midnight or later will observe a once-in-earth's-lifetime event this month. Possibly with the naked eye, and certainly with binoculars, they will be able to observe the newly discovered Comet Lulin on its trip through the inner solar system. Lulin is named for the Taiwanese observatory where it was first seen in July, 2007.

Comet Lulin will look like a greenish fuzzy blob, with a very bright center, and probably a tail. It will appear much bigger than a star. It should be brightest on February 24, its closest approach to the earth. At that time it will be half the distance between the earth and the sun-61million km (about 38 million miles) away and traveling at 50 km(31miles) per second toward the outer part of the solar system.



This image of Comet Lulin was taken before dawn on the morning of February 9. This comet displays a rare view of an anti-tail, giving the comet the appearance of having two tails. This is a result of the unusual orbital geometry of the comet, so the the comet's dust tail is visible on one side, and the comet's ion tail is visible on the other side.

Photo and legend from Sid Leach, Scottsdale AZ

Under good conditions the comet is visible now. According to UMSL astronomer Erika Gibbs, “Comet Lulin is currently in the constellation Virgo, heading very quickly toward the constellation Leo. Virgo rises in the Southeast around midnight. On Feb 16, it is very near the bright star Spica in Virgo. On Feb 24th, when Lulin is closest to Earth and should be brightest, it will be pretty close to Saturn, which is currently near the back foot of Leo. On February 28, Lulin will pass very close to Regulus, the bright star at the bottom of the backward question mark pattern of stars that make up Leo's head (Leo is the lion).”

If you are not familiar with landmarks in the nighttime sky, you can go to <http://www.skyandtelescope.com/observing/highlights/35992534.html> for a downloadable skymap. Basically, you should look east. On February 23, it will be just east of Saturn, which appears as a very bright star. It will gradually move west according to [http://stargazing.suite101.com/article.cfm/new\\_comet\\_lulin\\_easy\\_to\\_spot\\_this\\_winter](http://stargazing.suite101.com/article.cfm/new_comet_lulin_easy_to_spot_this_winter).

## **What are comets, and why are they so exciting?**

Obviously, comets are exciting to the lay observer because they look so cool. They are small objects, less than 100 km in diameter, about half ice and half dust. They are too small to detect until they get into the inner solar system, where the sun warms them, vaporizing part of the water vapor and creating dust. The dust and gas are the comet's "coma" that makes it appear fuzzy. Some of the dust also forms a visible tail of dust that can extend several million km, always pointing away from the sun. A comet can also have an "ion tail" of charged particles created by solar energy.

To astronomers like Gibbs, comets are exciting because they were created at the same time as the solar system, about 4.5 billion years ago. She will be able to collect data on organic matter from these vaporizing pieces of primordial matter.

## **Why is Comet Lulin a once-in-earth's-lifetime event?**

This comet is thought to come from the Oort cloud, a spherical shell of comets surrounding the solar system, about 1-2 light years away from us. At the beginning of the solar system, the gravity of the giant planets—Jupiter, Saturn, Uranus, and Neptune—flung these little fragments away to form the Oort cloud.

Comet fragments normally stay in the Oort cloud. But sometimes a passing star will give one a little tug and sends it either into space or into the inner solar system where earth resides. Comet Lulin is following a hyperbolic orbit. Therefore, after it circles the sun, it will go back to outer space, either to the Oort cloud or beyond. (Comets are too small to actually follow into outer space.) It will not come back again.



Photo by Paolo Candy  
Soriano, Italy  
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