



Global Friendship Through Space Education

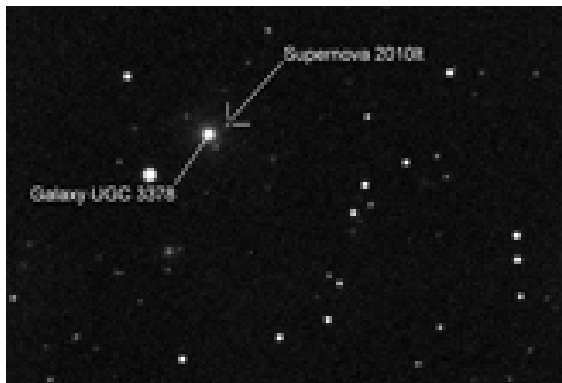
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# ASTRO

## The Partner School Science Program Newsletter

### 10-year-old is Youngest to Discover Exploding Star



It may have only appeared as a tiny, glowing spot hovering over a distant galaxy, but the sight made a precocious 10-year-old amateur astronomer the youngest person ever to have detected a stellar explosion called a supernova.

Kathryn Aurora Gray of Fredericton, New Brunswick in Canada discovered the supernova explosion in a galaxy, called UGC 3378, within the faint constellation of Camelopardalis. The galaxy is approximately 240 million light-years away.

"I'm really excited. It feels really good," Gray told the Toronto Star.

Gray made the discovery on Jan. 2 using images that were taken of galaxy UGC 3378 on New Year's Eve. The supernova was then verified by Illinois-based amateur astronomer Brian Tieman and Arizona-based amateur astronomer Jack Newton, who then reported it to the International Astronomical Union's Central Bureau for Astronomical Telegrams.

Gray reported the stellar explosion under the supervision of her father, Paul Gray, who has made six prior supernova discoveries, and family friend David Lane, who has found three others himself. The photos of galaxy UGC 3378 were taken using a telescope belonging to Lane.

Supernovas are powerful and violent explosions that signal the deaths of stars several times more massive than our sun. These cosmic blasts are interesting to

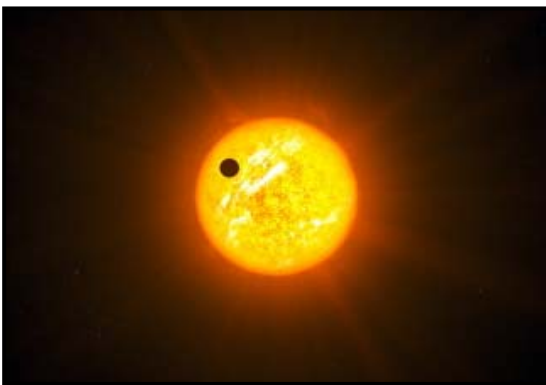
astronomers because they manufacture most of the chemical elements that went into creating the Earth and other planets. Distant supernovas can also be used to estimate the size and age of our universe.

The last supernova found in our galaxy occurred several hundred years ago, and they are considered relatively rare events. Astronomers can increase their odds of discovering a supernova by repeatedly checking and comparing many different galaxies.

A new supernova reveals itself as a bright point of light that was not present in previous observations. And, since a supernova can outshine millions of ordinary stars, it is often easy to spot one with a modest telescope, even in distant galaxies like UGC 3378.

Despite being the discoverer of this one, Gray didn't get to bestow a name on the object, which is known simply as Supernova 2010lt.

## Planets Do Gymnastics



Cartwheels aren't just for gymnasts anymore — a gang of distant, unusual planets may have done giant, deep-space cartwheels to get into place. And those cartwheels are making scientists think again about what they know about planet formation.

These planets are unusual because they orbit, or move around their stars, backward. In our solar system, all eight major planets (sorry, Pluto!) move around the sun in the same direction: counter-clockwise when looking down on the sun's north pole. The sun, too, is spinning in that direction.

Scientists believe that all the planets in the solar system were formed from the same giant disk of debris — mainly gas and dust — that was slowly moving around the sun billions of years ago. Since the debris was moving, the planets, including Earth, that formed also moved in the same direction as the debris.

That's the way it works in the solar system, so astronomers have wondered whether planetary systems around other stars work in the same way.

Astronomers have found six planets moving around their host stars in the opposite direction. This finding suggests that scientists may have to think again about how planets form. All six of these planets are "hot Jupiters." Hot Jupiters are giant — as

big as or bigger than Jupiter — and orbit so close to their host stars that they're blazing hot.

Andrew Cameron, an astronomer at the University of St. Andrews in Scotland, has proposed an explanation for these wrong-way planets: he suggests that a much larger object —another star, or a giant planet, perhaps — may have come along. Gravity is a force that comes with mass, so planets or stars with more mass have more gravity, and thus a stronger pull on other objects. Large objects have strong gravitational forces, and these strong forces may have affected the way the planets move around their stars. Astronomers believe these forces can be so strong that they cause the planet's orbit to flip like a jump rope over the star. This effect, called the Kozai mechanism, may explain how a hot Jupiter ends up orbiting backward around its star.

## **IMAGE OF THE DAY - As the Stars Turn**

Star trails create arches over the horizon in a long-exposure picture of the night sky taken from Mount Kilimanjaro in Tanzania.



The shot shows the apparent motion of the stars around Polaris, the star that's almost exactly aligned with Earth's north celestial pole. Also called the North Star, Polaris is the brightest dot in the constellation Ursa Minor.

*Image Credit: Kwon O Chul, TWAN*

Equatorial regions, such as Kilimanjaro, are the only places on Earth where the celestial poles sit right at the horizon.

*Note: Image of The Day section's aim is to create curiosity in your mind and make you want to search about the image or topic, rather than us giving full details about the image. We are expecting you to ask yourself questions and to search for information about the image of the day to get answers and learn more.*