

Space is supported by its audience. When you purchase through links on our site, we may earn an affiliate commission. [Learn more](#)

Scientists find chunk of blown-apart star hurtling through Milky Way at breakneck speed

By [Daisy Dobrijevic](#) published 6 August 21

LP 40-365 will probably leave the galaxy at some point, scientists say.



Artist's impression of a supernova ejecting a white dwarf star. (Image credit: Mark Garlick / Science Photo Library via Getty Images)

A chunk of stellar shrapnel is careering toward the edge of our [Milky Way](#) galaxy at almost 2 million mph (3.2 million kph), a new study reports.

"The star is moving so fast that it's almost certainly leaving the galaxy," study co-lead author J.J. Hermes, an associate professor of astronomy at Boston University, said in a [statement](#).

The star, known as LP 40-365, currently lies about 2,000 light-years from Earth. And calling it a star may be a bit generous, actually; Hermes and his colleagues think it's a hunk of a superdense stellar corpse called a white dwarf that was blown apart in a violent [supernova](#) explosion after gobbling up too much mass from a companion.

Sponsored Links

Play this game for 1 minute and see why everyone is addicted.

Raid Shadow Legends

[Supernova photos: Great images of star explosions](#)

"To have gone through partial detonation and still survive is very cool and unique, and it's only in the last few years that we've started to think this kind of star could exist," study co-author Odelia Putterman, a former Boston University student who has worked in Hermes' lab, said in the same statement.

The speedy star was spotted during an analysis of survey data gathered by NASA's [Hubble Space Telescope](#) and Transiting Exoplanet Survey Satellite ([TESS](#)). The researchers noticed that LP 40-365 is not only racing along but is also rotating once every nine hours as it goes.

The rotation in itself is nothing unusual, for all stars rotate; our own [sun](#) spins on its axis every 27 Earth days. However, according to researchers, a nine-hour rotational period is considered to be relatively slow for an object that went through something as catastrophic as a supernova.

It's this sluggish rotation that implies LP 40-365 was once part of a [two-star system](#) with an unhealthy feeding habit.

According to the researchers, stars commonly orbit each other in close pairs, including highly dense [white dwarfs](#). In such binary systems, if one white dwarf transfers too much mass to the other, the result can be a supernova — the largest explosion that takes place in space, [according to NASA](#).

It's usually hard to determine which star was the "donor" and which was the "eater." But because LP 40-365's rotation is relatively slow, the research team feels confident that the object is cosmic shrapnel from the exploded star. As the two stars orbited each other at high speeds and in close proximity, the resulting supernova likely catapulted both stars out at breakneck speed, but we've only been able to spot LP 40-365, according to the statement.

"This [paper] adds one more layer of knowledge into what role these stars played when the supernova occurred," and what can happen after the explosion, Putterman said. "By understanding what's happening with this particular star, we can start to understand what's happening with many other similar stars that came from a similar situation."

These supernova survivors are even more intriguing as they are metal-rich, unlike our sun, which is primarily composed of hydrogen and helium. (Astronomers consider any element heavier than hydrogen and helium a metal.)

"These are very weird stars," Hermes said. "What we're seeing are the byproducts of violent nuclear reactions that happen when a star blows itself up." Strange stars like LP 40-365 are therefore fascinating targets to study, the researchers said.

The research is described in a study [published June 10](#) in The Astrophysical Journal Letters.

You can follow Daisy Dobrijevic on Twitter at [@DaisyDobrijevic](#). Follow us on Twitter [@Spacedotcom](#) and on [Facebook](#).

[Join our Space Forums](#) to keep talking space on the latest missions, night sky and more! And if you have a news tip, correction or comment, let us know at: community@space.com.

Daisy Dobrijevic  
Staff Writer, All About Space Magazine

Daisy is a Staff Writer for [All About Space](#) magazine. She has completed a PhD in plant physiology and holds a Master's in Environmental Science. Before joining All About Space, Daisy completed an editorial internship with the BBC Sky at Night Magazine and worked at the [National Space Centre](#) in Leicester, U.K., where she enjoyed communicating space science to the public. Daisy is currently based in Nottingham, U.K.

What Full Mouth Dental Implants Should Cost In St Louis

Branded Links | Sponsored

Will we ever know the true nature of 'Oumuamua, the first interstellar visitor?

Astronomers have proposed lots of ideas to explain 'Oumuamua's odd characteristics, and we're unlikely ever to find out which one is correct.

Space

SpaceX Dragon cargo ship to depart space station today after weather delay. How to watch it live.

SpaceX has postponed the departure of its latest Dragon cargo ship from the International Space Station until Sunday, Jan. 23, due to weather.

Space

Play this game for 1 minute and see why everyone is addicted.

Raid Shadow Legends | Sponsored

If You Need To Kill Time On Your Computer, This Vintage Game Is A Must Have No

IT YOU NEED TO KILL TIME ON YOUR COMPUTER, THIS VINTAGE GAME IS A MUST-HAVE. NO INSTALL.

Forge Of Empires | Sponsored

The App That's Teaching Americans Spanish In 15 Minutes A Day

Get 60% OFF + Lifetime Access | This Week Only!

Babbel | Sponsored

The World War 3 strategy game. Play now, no install required!

Conflict Of Nations: World War III | Sponsored

Thomas Pesquet: 1st French astronaut to command the International Space Station

Space

NASA upgrades its asteroid hazard software to use sunlight

Space

Hottest market on earth: NYC's \$1B startup Masterworks is the latest unicorn

This \$1 billion investing app lets you diversify your portfolio with multimillion-dollar paintings for a fraction of the cost.

Masterworks | Sponsored

Astronaut's Arrest Spotlights Differences in NASA, Navy Policies

The bizarre arrest of NASA astronaut Lisa Nowak Monday cast in sharp relief the guidelines governing civilian and military spaceflyers.

Space



SIGN UP FOR E-MAIL NEWSLETTERS

Get breaking space news and the latest updates on rocket launches, skywatching events and more!

- Contact me with news and offers from other Future brands
- Receive email from us on behalf of our trusted partners or sponsors

SIGN ME UP

Thank you for signing up to Space. You will receive a verification email shortly.

There was a problem. Please

refresh the page and try again.

By submitting your information you agree to the [Terms & Conditions](#) and [Privacy Policy](#) and are aged 16 or over.

1 Atlas V rocket launches 2 surveillance satellites for US Space Force

2 Hubble telescope spots a black hole fostering baby stars in a dwarf galaxy

3 Pictures from space! Our image of the day

4 How was the moon formed?

5 How fast is Earth moving?

Space is part of Future US Inc, an international media group and leading digital publisher. [Visit our corporate site.](#)

[About Us](#)

[Terms and conditions](#)

[Privacy policy](#)

[Cookies policy](#)

[Accessibility Statement](#)

[Topics](#)

[Advertise with us](#)

[Web notifications](#)

[Careers](#)

[Do not sell my info](#)

© Future US, Inc. 11 West 42nd Street, 15th Floor, New York, NY 10036.