



## Cathay March 2022

[www.cathayradio.org](http://www.cathayradio.org)

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**Mission:** The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses. We support local community requests for HAM emergency communications. Several of us are trained in CPR/ First Aid and are involved with community disaster preparedness.

**Monday Night Net Time:** 9 PM Local Time/PST, Repeater: WB6TCS - RX 147.210, TX 147.810, Offset +0.6 MHz, CTCSS/Tone PL100 Hz

Please note: Repeater: N6MNV UHF 442.700 Mhz, Offset +5MHz, CTCSS/Tone PL 173.8 Hz in South San Francisco is cross linked every Monday Night Net at 9 p.m. to WB6TCS 2-meter repeater.

The CARC Monday night net is the best way to find out the latest club news. All check-ins are welcome.

**Message from the President:** George Chong, W6BUR

Hello CARC Members and Friends;

Many thanks to Mr. Denis L. Moore – WB6TCS for the use of his repeater for our CARC Monday Night Net.

I wish to thank our CARC members that set aside their valuable time to participate in our Monday night's nets.

**Chat sub s'em to all you CARC members! - George W6BUR.**

## **Tech Article Introduction:**

For the first time it has been documented by astronomers at the University of California Santa Cruz and Northwestern University where the life cycle of a red giant was transformed into a supernova type II, named supernova 2020tlf, or SN 2020tlf.

Supernova 2020tlf is located within NGC 5731 galaxy about 120 light years away and has the mass 10 times of our sun.

In the summer of 2020, the observed red supergiant, SN 2020tlf, was first detected by the University of Hawai'i Institute for Astronomy Pan-STARRS on Maui. The team studied SN 2020tlf during the last 130 days of its life.

Please go the Tech Article Section for more information.

## **Public Service Announcements**

### **HAM CRAM / HAM Licensing**

For upcoming HAM Licensing locations please refer to:

<http://www.arrl.org/find-an-amateur-radio-license-exam-session>

### **Auxiliary Communications Service (ACS)**

The Auxiliary Communications Service (ACS) is a unit of trained professionals who supply communications support to the agencies of the City and County of San Francisco, particularly during major events/incidents. ACS goals are the support of gathering and distribution of information necessary to respond to and recover from a disaster.

The ACS Net begins at 1930 hours (7:30 p.m. PT) local time each Thursday evening, on the WA6GG repeater at 442.050 MHz, positive offset, tone 127.3 Hz. The purpose of this net is to practice Net Control skills, practice checking in with deployment status in a formal net, and to share information regarding upcoming ACS events. Guests are welcome to check in. ACS members perform Net Control duty on a regular basis. On the second Thursday of each month, the net is conducted in simplex mode on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz.

ACS holds its General Meetings on the third Tuesday of each month from 1900 hours to 2100 hours local time. Currently meeting are exclusively conducted over Zoom during the COVID-19 pandemic, ACS looks forward to meeting in person again as soon as possible.

Upcoming meeting dates in 2022 are:

- March 15, 2022
- April 19, 2022
- May 17, 2022

Location of in person future ACS meetings are yet to be determined as the regular location is under reconstruction until January 2023. All interested persons are welcome to attend. For further information, contact Corey Siegel KJ6LDJ <kj6ldj@gmail.com>.

For more information, please attend an ACS meeting, check in on the ACS radio net, or call 415-558-2717.

**Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department (SFFD).**

<http://sf-fire.org/calendar-special-events>

**+ TBD**

Spring into Readiness!

This Virtual Drill will take place from 9am-12pm with virtual skill rotations and words from some special guests!

Invitation and sign-up coming next week!

**+ Recertifications - Coming Soon!**

Now that San Francisco has entered the Red Tier for COVID-19 Transmission (see <https://covid19.ca.gov/safer-economy/#county-status> for more details), we are working to schedule recertification trainings for NERTs who were current as of December 2019 or later. Stay tuned for details and times over the next month! jl(At this time, all class 5&6 recerts will take place outdoors only, at the SFFD Division of Training at 19th St & Folsom St in the Mission.)

**\*SFFD DOT** is the Fire Department Division of Training. All participants walking, biking or driving **enter through the driveway gate on 19th St.** between Folsom and Shotwell. Parking is allowed along the back toward the cinderblock wall.

Visit [www.sfgov.org/sffdnert](http://www.sfgov.org/sffdnert) to learn more about the training, other locations, and register on line. Upcoming Special NERT Events.

## **San Francisco Police Department: Auxiliary Law Enforcement Response Team (ALERT)**

The Auxiliary Law Enforcement Response Team (ALERT) is a citizen disaster preparedness program designed. The ALERT program is for volunteers 16 years of age or older, who live, work, or attend high school in San Francisco.

Graduates of the San Francisco Police Activities League (P.A.L) Law Enforcement Cadet Academy are also eligible to join.

ALERT volunteers will no longer need to complete the Fire Department's Neighborhood Emergency Response Team (NERT) ([www.sfgov.org/sfnert](http://www.sfgov.org/sfnert)) training and then graduate into two 8 hour Police Department course specifically designed for ALERT team members.

ALERT members will work closely with full-time and/or Reserve Police Officers in the event they are deployed after a disaster. The Basic ALERT volunteer will have no law enforcement powers other than those available to all citizens.

### **SFPD ALERT Training (New Members)**

The next SFPD ALERT training class has been scheduled for: TBD

\* Class date indicated are only for new members

IMPORTANT- All participants must complete the background interview process in order to be eligible to attend the ALERT training class.

Eligible ALERT participants may register for a training class by contacting the ALERT Program Coordinator, Marina at [sfpdalert@sfgov.org](mailto:sfpdalert@sfgov.org), or by telephone at 415-401-4615.

### **SFPD ALERT Practice/Training Drill**

All active/trained ALERT members are asked to join us for our next training drill, via scheduled for on

TBD

For more information on the San Francisco Police Department ALERT Program, email us at [sfpdalert@sfgov.org](mailto:sfpdalert@sfgov.org), or call Lt. Marina Chacon (SFPD Ret.), SFPD ALERT Program Coordinator, at (415) 401-4615.

For additional information on the web please refer to:

<https://sfgov.org/policecommission/alert>

## Tech Article

# UC SANTA CRUZ NEWSCENTER

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## Astronomers witness the explosive end of a dying star

The Young Supernova Experiment transient survey observed a red supergiant during its final 130 days leading up to a supernova explosion

January 06, 2022

By [Mari-Ela Chock \(Keck\)](#) & [Tim Stephens \(UCSC\)](#)

<https://news.ucsc.edu/2022/01/supernova-2020tlf.html>



An artist's impression of a red supergiant star in the final year of its life emitting a tumultuous cloud of gas. This suggests at least some of these stars undergo significant internal changes before going supernova.

(Credit: W. M. Keck Observatory/Adam Makarenko)

For the first time, astronomers have imaged in real time the dramatic end to a red supergiant's life, watching the massive star's rapid self-destruction and final death throes before it collapsed into a Type II supernova.

"We finally detected the death throes of this relatively common type of stellar explosion," said Ryan Foley, assistant professor of astronomy and astrophysics at UC Santa Cruz.

Foley's team leads the Young Supernova Experiment (YSE) transient survey, which observed the red supergiant during the last 130 days leading up to its deadly detonation. "This was only possible because of the Young Supernova Experiment, which is able to detect subtle changes of very faint and distant stars," he said.

The research team reported their findings in a paper [published January 6 in the \*Astrophysical Journal\*](#).

"This is a breakthrough in our understanding of what massive stars do moments before they die," said lead author Wynn Jacobson-Galán, a UCSC alumnus and NSF Graduate Research Fellow at UC Berkeley. "Direct detection of pre-supernova activity in a red supergiant star has never been observed before in an ordinary Type II supernova. For the first time, we watched a red supergiant star explode!"

Using the Pan-STARRS telescope at the Haleakala Observatory in Hawaii, the YSE team first detected the doomed massive star in summer of 2020 via the huge amount of light radiating from the red supergiant. A few months later, in fall 2020, a supernova lit the sky.

The team quickly captured the powerful flash and obtained the very first spectrum of the energetic explosion, named supernova 2020tlf, or SN 2020tlf, using the W. M. Keck Observatory's Low Resolution Imaging Spectrometer (LRIS). The data showed direct evidence of dense circumstellar material surrounding the star at the time of explosion, likely the same gas that Pan-STARRS had imaged the red supergiant star violently ejecting earlier in the summer.

"When the data came off the telescope, I saw the telltale signs of a supernova ramming into some material thrown off the star shortly before explosion," Foley said.

"Keck was instrumental in providing direct evidence of a massive star transitioning into a supernova explosion," added senior author Raffaella Margutti, associate professor of astronomy at UC Berkeley. "It's like watching a ticking time bomb. We've never confirmed such violent activity in a dying red supergiant star, where we see it produce such a luminous emission, then collapse and combust, until now."

The team continued to monitor SN 2020tlf after the explosion. Based on data obtained from Keck Observatory's DEep Imaging and Multi-Object Spectrograph (DEIMOS) and Near Infrared Echellette Spectrograph (NIRES), they determined SN 2020tlf's progenitor red supergiant star, located in the NGC 5731 galaxy about 120 million light-years away, was 10 times more massive than the sun.

The discovery defies previous ideas of how red supergiant stars evolve right before blowing up. Prior to this, all red supergiants observed before exploding were relatively quiescent—they showed no evidence of violent eruptions or luminous emission, as was observed prior to SN 2020tlf. However, this novel detection of bright radiation coming from a red supergiant in the final year before exploding suggests that at least some of these stars must undergo significant changes in their internal structure, which then results in the tumultuous ejection of gas moments before they collapse.

Margutti and Jacobson-Galán conducted most of the study during their time at Northwestern University, with Margutti serving as an associate professor of physics and astronomy and member of CIERA (Center for Interdisciplinary Exploration and Research in Astrophysics), and Jacobson-Galán as a graduate student.

The team's discovery paves a path forward for transient surveys like YSE to hunt for luminous radiation coming from red supergiants and gather more evidence that such behavior could signal the imminent, supernova demise of a massive star.

“I am most excited by all of the new ‘unknowns’ that have been unlocked by this discovery,” said Jacobson-Galán. “Detecting more events like SN 2020tlf will dramatically impact how we define the final months of stellar evolution, uniting observers and theorists in the quest to solve the mystery on how massive stars spend the final moments of their lives.”