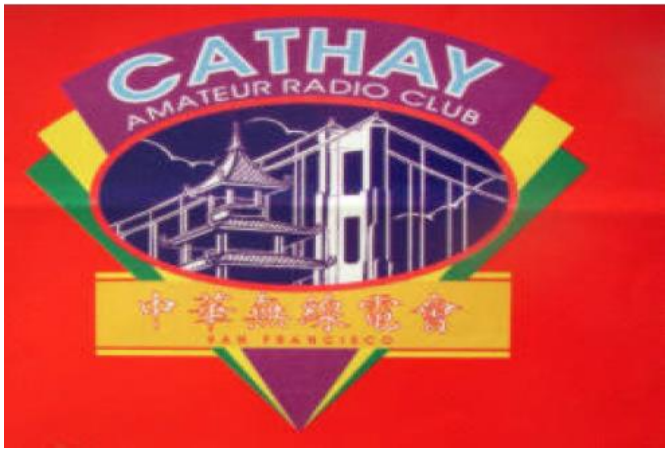

Cathay July 2021

www.cathayradio.org

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Web Master: Edison Fong – *WB6IQN* - **email:** edison_fong@hotmail.com
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.

I hope you all had a safe and fun July 4th.

On a personal note, I am and many of the CARC members are still reeling in shock over the loss of two of our long time and esteemed CARC members: Terry W. Arnall - WB6TA and John and Tim – W6QNT. A detailed Silent Key write up of Terry and Tim was in last month's CARC June 2021 newsletter.

 Terry W. Arnall - WB6TA	 John Chan Tim – W6QNT

Both Terry and John will be greatly missed by the CARC membership. They both did so much on behalf of the CARC that they always be in our minds and hearts.

Tech Article Introduction:

This month's tech article contains the detection of Fast Radio Burst (FRB) from the newly installed new Canadian CHIME radio telescope.

Except from: https://chime-experiment.ca/en

CHIME is a novel radio telescope that has no moving parts. Originally conceived to map the most abundant element in the universe - hydrogen - over a good fraction of the observable universe, this unusual telescope is optimized to have a high "mapping speed", which requires a large instantaneous field of view (~200 square degrees) and broad frequency coverage (400-800 MHz). The digitized signals collected by CHIME will be processed to form a 3-dimensional map of hydrogen density, which will be used to measure the expansion history of the universe. At the same time, these signals can be combed for fast, transient radio emission, making CHIME a unique

telescope for discovering new "Fast Radio Bursts" and for monitoring many pulsars on a daily basis.

Location:

The CHIME Telescope is located at the Dominion Radio Astrophysical Observatory, a national facility for astronomy operated by the National Research Council of Canada.

Please read the latest press release MIT in the Tech Article Section of this newsletter.

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

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) was organized by the San Francisco Office of Emergency Services (OES) following the 1989 Loma Prieta Earthquake to support the communications needs of the City and County of San Francisco when responding to emergencies and special events.

The Auxiliary Communications Service holds General Meetings on the third Tuesday of each month at the San Francisco Emergency Operations Center, 1011 Turk Street (between Gough Street and Laguna Street), from 1900 hours to 2100 hours local time. All interested persons are welcome to attend.

The ACS Net begins at 1930 hours (7:30 p.m.) 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 should perform Net Control duty on a regular basis. On the second Thursday of each month, the net will be conducted on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz, simplex.

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

Upcoming meetings: TBD

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!
(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*** 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) 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, 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

#028 Saturday 08/21/2021 9 AM – 1 PM via ZOOM

#029 Saturday 11/06/2021 6pm -10 pm via ZOOM (Night Exercise)

For more information on the San Francisco Police Department ALERT Program, email us at 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

MIT News | Massachusetts Institute of Technology

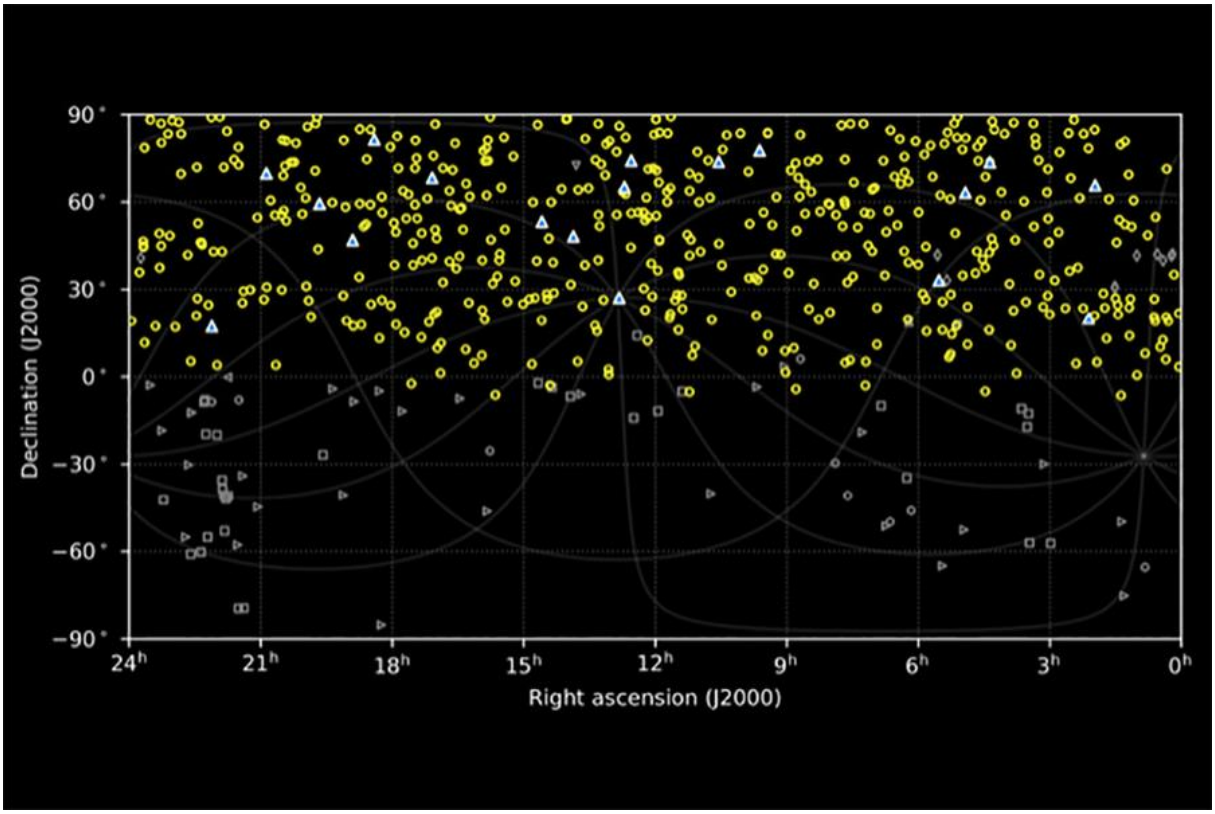
CHIME telescope detects more than 500 mysterious fast radio bursts in its first year of operation

Observations quadruple the number of known radio bursts and reveal two types: one-offs and repeaters.

Jennifer Chu | MIT News Office Publication Date: June 9, 2021

https://news.mit.edu/2021/chime-telescope-fast-radio-bursts-0609

The large radio telescope CHIME, pictured here, has detected more than 500 mysterious fast radio bursts in its first year of operation, MIT researchers report.
Credits: Image: Courtesy of CHIME



A sky map of FRBs based on CHIME detections reveals bursts distributed evenly across the night sky. Credits: Image: Courtesy of CHIME

To catch sight of a fast radio burst is to be extremely lucky in where and when you point your radio dish. Fast radio bursts, or FRBs, are oddly bright flashes of light, registering in the radio band of the electromagnetic spectrum, that blaze for a few milliseconds before vanishing without a trace.

These brief and mysterious beacons have been spotted in various and distant parts of the universe, as well as in our own galaxy. Their origins are unknown, and their appearance is unpredictable. Since the first was discovered in 2007, radio astronomers have only caught sight of around 140 bursts in their scopes.

Now, a large stationary radio telescope in British Columbia has nearly quadrupled the number of fast radio bursts discovered to date. The telescope, known as CHIME, for the Canadian Hydrogen Intensity Mapping Experiment, has detected 535 new fast radio bursts during its first year of operation, between 2018 and 2019.

Scientists with the CHIME Collaboration, including researchers at MIT, have assembled the new signals in the telescope's first FRB catalog, which they will present this week at the American Astronomical Society Meeting.

The new catalog significantly expands the current library of known FRBs, and is already yielding clues as to their properties. For instance, the newly discovered bursts appear to fall in two distinct classes: those that repeat, and those that don't. Scientists identified 18 FRB sources that burst repeatedly, while the rest appear to be one-offs. The repeaters also look different, with each burst lasting slightly longer and emitting more focused radio frequencies than bursts from single, nonrepeating FRBs.

These observations strongly suggest that repeaters and one-offs arise from separate mechanisms and astrophysical sources. With more observations, astronomers hope soon to pin down the extreme origins of these curiously bright signals.

"Before CHIME, there were less than 100 total discovered FRBs; now, after one year of observation, we've discovered hundreds more," says CHIME member Kaitlyn Shin, a graduate student in MIT's Department of Physics. "With all these sources, we can really start getting a picture of what FRBs look like as a whole, what astrophysics might be driving these events, and how they can be used to study the universe going forward."

Seeing flashes

CHIME comprises four massive cylindrical radio antennas, roughly the size and shape of snowboarding half-pipes, located at the Dominion Radio Astrophysical Observatory, operated by the National Research Council of Canada in British Columbia, Canada. CHIME is a stationary array, with no moving parts. The telescope receives radio signals each day from half of the sky as the Earth rotates.

While most radio astronomy is done by swiveling a large dish to focus light from different parts of the sky, CHIME stares, motionless, at the sky, and focuses incoming signals using a correlator — a powerful digital signaling processor that can work through huge amounts of data, at a rate of about 7 terabits per second, equivalent to a few percent of the world's internet traffic.

"Digital signal processing is what makes CHIME able to reconstruct and 'look' in thousands of directions simultaneously," says Kiyoshi Masui, assistant professor of physics at MIT, who will lead the group's conference presentation. "That's what helps us detect FRBs a thousand times more often than a traditional telescope."

Over the first year of operation, CHIME detected 535 new fast radio bursts. When the scientists mapped their locations, they found the bursts were evenly distributed in space, seeming to arise from any and all parts of the sky. From the FRBs that CHIME was able to detect, the scientists calculated that bright fast radio bursts occur at a rate of about 800 per day across the entire sky — the most precise estimate of FRBs overall rate to date.

“That’s kind of the beautiful thing about this field — FRBs are really hard to see, but they’re not uncommon,” says Masui, who is a member of MIT’s Kavli Institute for Astrophysics and Space Research. “If your eyes could see radio flashes the way you can see camera flashes, you would see them all the time if you just looked up.”

Mapping the universe

As radio waves travel across space, any interstellar gas, or plasma, along the way can distort or disperse the wave’s properties and trajectory. The degree to which a radio wave is dispersed can give clues to how much gas it passed through, and possibly how much distance it has traveled from its source.

For each of the 535 FRBs that CHIME detected, Masui and his colleagues measured its dispersion, and found that most bursts likely originated from far-off sources within distant galaxies. The fact that the bursts were bright enough to be detected by CHIME suggests that they must have been produced by extremely energetic sources. As the telescope detects more FRBs, scientists hope to pin down exactly what kind of exotic phenomena could generate such ultrabright, ultrafast signals.

Scientists also plan to use the bursts, and their dispersion estimates, to map the distribution of gas throughout the universe.

“Each FRB gives us some information of how far they’ve propagated and how much gas they’ve propagated through,” Shin says. “With large numbers of FRBs, we can hopefully figure out how gas and matter are distributed on very large scales in the universe. So, alongside the mystery of what FRBs are themselves, there’s also the exciting potential for FRBs as powerful cosmological probes in the future.”

This research was supported by various institutions including the Canada Foundation for Innovation, the Dunlap Institute for Astronomy and Astrophysics at the University of Toronto, the Canadian Institute for Advanced Research, McGill University and the McGill Space Institute via the Trottier Family Foundation, and the University of British Columbia.