

Cathay May 2022

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.

ARRL Field Day June 25 - 26, 2022 Announcement

CARC member Ed Fong - – *WB6/QN* is hosting the Annual CARC / SARES 2022 ARRL field day at the exclusive Fairbrae Swim and Racquet Club in Sunnyvale.

Yes, after a 2+ years hiatus, on Saturday June 25, 2022 at 2 PM, we have the wonderful opportunity to come together and meet face to face and renew our HAM club friendships, sharing a **FREE catered dinner**, talking about HAM Radio stuff and participating in ARRL field day.

Additional information is provided toward the end of this newsletter.

Many thanks to Ed Fong for taking on the huge task of organizing and running the combined CARC / SARES ARRL 2022 Field Day event.

COVID-19 Vaccine Update:

On Tuesday March 29, 2022 the FDA has approved a 2nd COVID-19 Booster shot for folks that are age 50 +, that are immunocompromised and previous booster shot taken at least 4 months prior.

For additional information, see link below:

<https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-second-booster-dose-two-covid-19-vaccines-older-and>

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

Tech Article Introduction:

An international team of astronomers, led by Marcin Glowacki while working at the South African Radio Astronomy Observatory's MeerKAT telescope, observed a most distant hydroxyl megamaser some 5 billion light-years away from earth.

A megamaser is a super-powerful laser made of microwave light (hence maser) that occurs upon collisions to two galaxies.

Please read the **Tech Section** of this newsletter for additional 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 meetings 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:

- May 17, 2022
- June 21, 2022
- July 19, 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>

Sat, May 21, 2022 9:00 AM – 10:00 AM PDT

May NERT Training via Zoom - Ask Captain Patty Yuen about Staging Area Ops!

WHEN: Saturday May 21st from 9 am to 10 am.

WHERE: This training will be held on Zoom. The link will be emailed to registrants on Friday May 20.

WHAT: At the April 16th Citywide Drill, NERTs built Staging Areas, ran Logistics, sent out Field Survey and Triage teams through Operations and much more. So much great work was done and so many great questions came up! During this **one hour** zoom training, Captain Yuen will be available to answer your Staging Area Ops questions. When you register, please scroll down and type your questions in the box provided. For longer questions, please email sffdnert@sfgov.org.

Whether you were at the drill or not, this will be a great opportunity to increase your knowledge and effectiveness. Hope you can join us!

Register at: <https://www.eventbrite.com/e/may-nert-training-ask-captain-patty-yuen-about-staging-area-ops-tickets-328941070597?aff=odcleoeventsincollection>

+ Recertifications - Coming Soon!

Pre-register here!

<https://www.eventbrite.com/e/are-you-a-nert-graduate-looking-to-recertify-pre-register-here-tickets-228380330717?aff=odcleoeventsincollection>

This is not for a specific date or location.

San Francisco Fire Department NERT is collecting information from NERT Graduates to help us plan for the new year. By signing up here, you will receive priority notification about upcoming recertification opportunities. This is for any NERT graduate, regardless of when you graduated or whether your NERT certification has expired. Thank you so much for your commitment to NERT and for providing us with information about when you last trained, etc.

Sign Up For Training Classes

This is not for a specific date or location.

San Francisco Fire Department is collecting contact details from prospective students so we can let you know when classes are available. We will email you when classes

become available. We plan on holding multiple trainings for new NERTs in 2022 and the information you provide will help us plan. Thank you!

<https://www.eventbrite.com/e/never-taken-nert-before-let-us-know-you-are-interested-in-2022-trainings-tickets-125825993935?aff=odcleoeventsincollection>

***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

TBD

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



Media release

<https://www.sarao.ac.za/media-releases/megamaser-nkalakatha-discovered-by-astronomers-using-meerkat/>

Megamaser “Nkalakatha” discovered by astronomers using MeerKAT

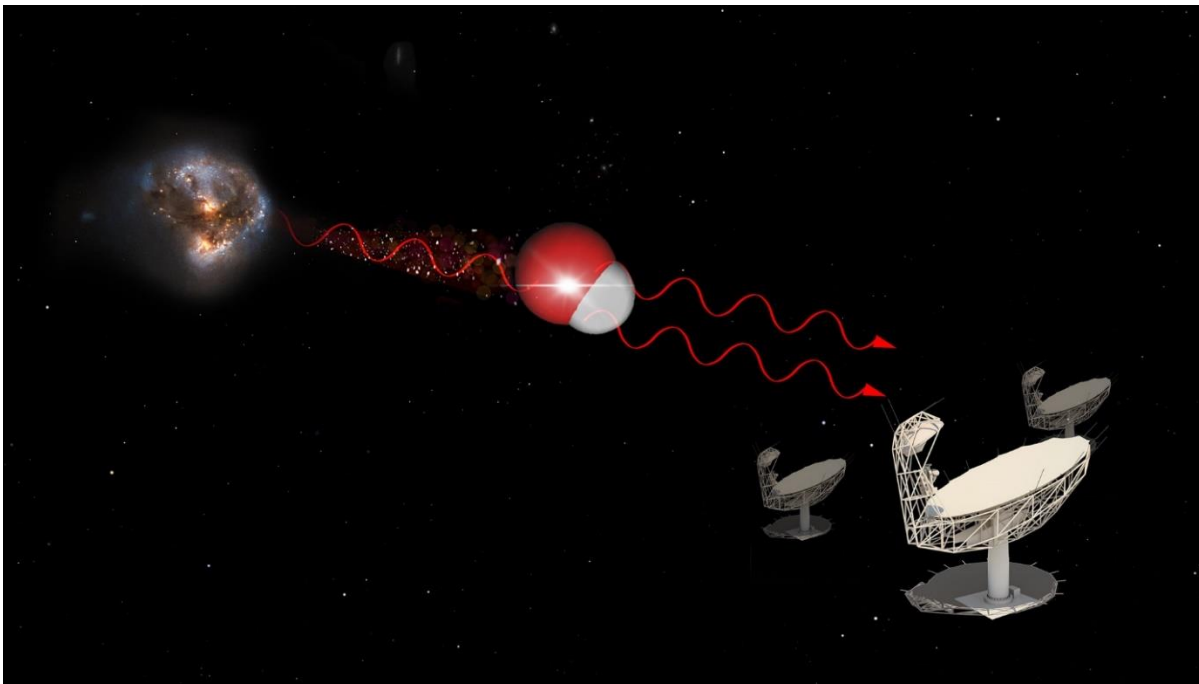
Date: Thursday, 7 April 2022

Using the MeerKAT radio telescope, a team of researchers from the University of the Western Cape, the University of Cape Town, Rhodes University, the South African Radio Astronomy Observatory and the South African Astronomical Observatory together with colleagues from 12 other countries have discovered a powerful megamaser – a radio-wavelength laser indicative of colliding galaxies. This is the most distant such megamaser found so far.

Galaxies are vast islands of matter in the universe. They are made of hundreds of billions of stars, gas and dark matter. When galaxies merge in collisions of cosmic proportions, the gas they contain becomes extremely dense. In particular, this can stimulate hydroxyl molecules, made of one atom of oxygen and one atom of hydrogen, to emit a specific radio signal called a maser (a maser is like a laser but emits radio waves instead of visible light). When that signal is exceedingly bright, it is called a megamaser. “When two galaxies like the Milky Way and the Andromeda Galaxy collide,

beams of light shoot out from the collision and can be seen at cosmological distances. The OH megamasers act like bright lights that say: here is a collision of galaxies that is making new stars and feeding massive black holes,” explains Prof. Jeremy Darling from the University of Colorado in the United States, a megamaser expert and co-author of the study.

Hydroxyl megamasers emit light at a wavelength of 18cm. This light belongs to the radio part of the electromagnetic spectrum, and it is the type of light that the MeerKAT radio telescope in the Karoo is designed to capture exceptionally well.



Artist's impression of a hydroxyl maser. Inside a galaxy merger are hydroxyl molecules, composed of one atom of hydrogen and one atom of oxygen. When one molecule absorbs a photon at 18cm wavelength, it emits two photons of the same wavelength. When molecular gas is very dense, typically when two galaxies merge, this emission gets very bright and can be detected by radio telescopes such as the MeerKAT. © IDIA/LADUMA using data from NASA/StSci/SKAO/MoIView

The Looking at the Distant Universe with the Meerkat Array (LADUMA) team leads one of the big MeerKAT science experiments, which is looking for neutral hydrogen gas in galaxies in one area of the sky, and looking for it very deeply – meaning very far from us, both in space and in time. By measuring the neutral hydrogen gas in galaxies from the distant past to now, LADUMA will contribute to our understanding of the evolution of

the universe. This is no minor exercise, and so the research team comprises scientists from South Africa, Australia, Chile, France, Germany, India, Italy, Japan, the Netherlands, South Korea, Spain, the UK, and the US. “LADUMA is probing hydrogen within a single ‘cosmic vuvuzela’ that extends to when the universe was only a third of its present age,” says Associate Professor Sarah Blyth from the University of Cape Town.

To look for hydrogen, the team looks for light with a wavelength of 21cm that has been stretched to longer wavelengths by the expansion of the universe. However, light from other atoms and molecules is also present, and in their very first observation with MeerKAT, the team detected bright emission from hydroxyl molecules that had been even more stretched from its original wavelength of 18cm.

Dr. Marcin Glowacki, previously a researcher at the Inter-University Institute for Data-Intensive Astronomy (IDIA) and University of the Western Cape, and now based at the Curtin University node of the International Centre for Radio Astronomy Research (ICRAR), led the investigation. He explains, “It’s impressive that in a single night of observations with MeerKAT, we already found a redshift record-breaking megamaser. The full 3000+ hour LADUMA survey will be the most sensitive of its kind.” When they saw this signal in the data coming from the telescope, and confirmed that it was coming from hydroxyl, the team realised that they had a megamaser on their hands.

To make this discovery, the team had to run complex scientific algorithms on large amounts of data. This was made possible by the Inter-University Institute for Data Intensive Astronomy (IDIA) research cloud computing facility. This facility exists to help the South African research community do as much science as possible with the MeerKAT, and with the upcoming Square Kilometre Array in the future. Indeed, it is one thing to collect a lot of data, and another to work with it.

Facilities like IDIA’s are imperative if astronomers are to do as much science as possible with the MeerKAT, and with the Square Kilometre Array in the future.

Once the team knew it was a megamaser, they went on to look for its host galaxy. Where was the megamaser coming from? The patch of sky explored by the LADUMA team has been observed in X-rays, optical light and infra-red, so the team was able to easily identify the host galaxy. The team also knew that such a powerful, distant megamaser needed a good nickname, and invited members of the public to offer suggestions. The winning suggestion was “Nkalakatha,” an isiZulu word that means “big boss,” which was suggested by Zolile Tibane, a student from Johannesburg who is studying computer science at the University of the Western Cape.

The host galaxy of “Nkalakatha” is known to have a long tail on one side, visible in radio waves. It is about 58 thousand billion billion (58 followed by 21 zeros) kilometres away, and the megamaser light was emitted about 5 billion years ago when the universe was only about two thirds of its current age. “We have already planned follow-up observations of the megamaser, and as LADUMA progresses we will make many more discoveries,” notes Dr. Glowacki.

This is the first time a megamaser has been detected at that distance from its emission at 18cm wavelength. The authors of the study point out that it is not surprising that they found such a bright megamaser, given how powerful the MeerKAT is, but the telescope is very new, so this find hopefully is one of many more to come. “MeerKAT will probably double the known number of these rare phenomena. Galaxies were thought to merge more often in the past, and the newly discovered OH megamasers will allow us to test this hypothesis,” comments Prof. Darling.

Radio astronomy is entering a truly exciting time with the upcoming Square Kilometre Array and its pathfinder telescopes, including MeerKAT. Unplanned discoveries are starting to emerge from the unprecedented amounts of data these instruments collect. And with MeerKAT and IDIA, South Africa is right at the cutting-edge of astronomy.

Notes to editors:

The scientific results of this study are published in:

[LADUMA: Discovery of a luminous OH megamaser at \$z > 0.5\$](#) Marcin Glowacki, Jordan D. Collier, Amir Kazemi-Moridani, Bradley Frank, Hayley Roberts, Jeremy Darling, Hans-Rainer Klöckner, Nathan Adams, Andrew J. Baker, Matthew Bershad, Tariq Blecher, Sarah-Louise Blyth, Rebecca Bowler, Barbara Catinella, Laurent Chemin, Steven M. Crawford, Catherine Cress, Romeel Davé, Roger Deane, Erwin de Blok, Jacinta Delhaize, Kenneth Duncan, Ed Elson, Sean February, Eric Gawiser, Peter Hatfield, Julia Healy, Patricia Henning, Kelley M. Hess, Ian Heywood, Benne W. Holwerda, Munira Hoosain, John P. Hughes, Zackary L. Hutchens, Matt Jarvis, Sheila Kannappan, Neal Katz, Dušan Kereš, Marie Korsaga, Renée C. Kraan-Korteweg, Philip Lah, Michelle Lochner, Natasha Maddox, Sphesihle Makhathini, Gerhard R. Meurer, Martin Meyer, Danail Obreschkow, Se-Heon Oh, Tom Oosterloo, Joshua Oppor, Hengxing Pan, D.J. Pisano, Nandrianina Randriamiarinarivo, Swara Ravindranath, Anja C. Schröder, Rosalind Skelton, Oleg Smirnov, Mathew Smith, Rachel S. Somerville, Raghunathan Srikanth, Lister Staveley-Smith, Masayuki Tanaka, Mattia Vaccari, Wim van Driel, Marc Verheijen, Fabian Walter, John F. Wu, & Martin A. Zwaan accepted for publication in the *Astrophysical Journal Letters*

LADUMA

LADUMA stands for Looking at the Distant Universe with the MeerKAT Array. The LADUMA survey is one of the MeerKAT large survey projects. LADUMA aims to study galaxy evolution by detecting the neutral hydrogen gas in distant galaxies, going back over the last 9 billion years of cosmic time

<http://www.laduma.uct.ac.za>

Inter-University Institute for Data Intensive Astronomy

The Inter-university Institute for Data Intensive Astronomy is a partnership of three South African universities, the Universities of Cape Town, of the Western Cape and of Pretoria as well as the South African Radio Astronomy Observatory. The overarching goal of IDIA is to build within the South African university research community the

capacity and expertise in data intensive research to enable global leadership on MeerKAT large survey projects and large projects on other SKA pathfinder telescopes

<https://www.idia.ac.za>

MeerKAT

The South African MeerKAT radio telescope, situated 90 km outside the small Northern Cape town of Carnarvon, is a precursor to the Square Kilometre Array (SKA) telescope and will be integrated into the mid-frequency component of SKA Phase 1. The MeerKAT telescope is an array of 64 interlinked receptors (a receptor is the complete antenna structure, with the main.

For more information contact
Dr. Carolina Odman
Email: carolina@idia.ac.za
Cell: +27 82 302 8167

The 2022 Annual CARC / SARES Picnic - ARRL Field Day

By Ed Fong

Date : Saturday June 25, 2022 – starting at 2 PM - dinner is at 4PM

Where: Fairbrae Swim & Racquet Club
696 Sheraton Dr, Sunnyvale, CA 94087

Cost: Free to all CARC / SARES Members, family and friends

Raffle tickets: - \$5 each

RSVP: edison_fong@hotmail.com

ARRL Field Day is coming up this year. It will take place Saturday June 25, 2022. Mark your calendars.

This year we have been very fortunate to have reserve the very exclusive Fairbrae Swim and Tennis Club in Sunnyvale, CA for our CARC/Sunnyvale Amateur Radio Emergency Service (SARES) 2022 ARRL Field Day.

This venue was brought back by popular demand having previously hosted CARC/SARES Field Day events. This is a beautiful well-maintained private facility in the heart of Silicon Valley with easy driving access and plenty of parking. It has a half Olympic size swimming pool, two full size tennis courts, large picnic area, industrial

kitchen, and full-size dining hall, clean restrooms, and showers for use of both members and guest.

We will have reserved the facility from 2 PM Saturday, June 25, 2022 through Sunday for our CARC/SARES ARRL 2022 Field Day.

A **FREE** catered Chinese dinner will be served at 4 PM. Food will be catered by the China Wok Restaurant, 1211 S Mary Ave, Sunnyvale, CA 94087. The owner has promised a Chinese feast to be enjoyed by all. It would be appreciated that attendees bring a desert to share with our group. Optional cash donations or additional purchases of raffle tickets would be accepted to help defray the cost and go toward future club events.

Bring your entire family (extended family) and have a great day of socialization, great food, swimming, tennis, and of course HAM Radio.

Radios and antennas will be setup for HF and VHF the day before. Bring your own radio and feel free to plug it in and operate. This is a great opportunity to operate other radios and experience the look and feel of various manufacturers.

There will also be the traditional raffle, which will include but not limited to - laptop computer, quad band mobile radio, antennas, etc. More details as we approach the date.

Mark your calendars – this is going to be fun!!!!



Fairbrae club front entrance



Picnic Area



Lap Pool Area



Children Play Area



Lounge Area



Overhead shot of Tennis courts and Swimming Pool