Deep Space Exploration Society

Web: https://dses.science/

Groups.io: https://groups.io/g/DSES

YouTube Channel: DSES YouTube

Newsletter

Welcome to the DSES Newsletter. The Newsletter will be published on a regular basis to inform members about the organization's activities. The newsletter is organized into sections: Headlines, News Articles, Events, and Information. In the Headlines section you can click on any Headline to jump immediately to the article.

Fall 2025 Headlines

President's Message

Welcome to the first edition of the DSES newsletter! We plan to publish the newsletter on a quarterly basis. Why a newsletter? We believe that some members can't keep up with the other communications offered by DSES: Website, Groups.io, Monthly Meetings and YouTube Channel. This newsletter will keep you informed about the organization's activities in one convenient place.

It's been a busy year, with our upcoming Open House being the big event of the year. Please consider coming to the Open House, and for local members, helping with the preparations that are needed. You can reach out to the **Board** with any questions.

Paul Sobon, President DSES

News Articles

Open House – September 27

The 10th Annual DSES Open house will be held on September 27th. We welcome all members and guests as well as the local community to the event. As a member, please consider helping to prepare the site and conduct tours during the event. Contact **Paul Sobon** to volunteer for this important activity.

Once again, we will have a catered BBQ donation lunch. Funds raised will be in support of the local high school.

For more information see the brochure **here**.

Member BBQ

The First Annual Fall BBQ Potluck was held at Richard and Elaine Hambly's house in the Black Forest area of Colorado Springs. We had a nice turnout and hamburger / hot dogs provided by DSES. Attendees brought side dishes and desserts. The weather was good, and there were plenty of opportunities for socializing. Rick showed off his amateur radio antennas and station / lab which was impressive. Members proudly showed off their DSES shirts too. If you are interested in ordering a shirt contact **Paul Sobon**.

Fund Raising Activities

With the completion of the new building our annual expenses have increased significantly. This includes utilities (water, power, internet) as well as property tax. As such, the annual membership fees will no longer support the organization. To fill the gap, DSES has undertaken several efforts to raise additional funds.

We are now a registered Colorado Charity and can take part in the annual Colorado Gives fund raising campaign on December 9th. More information will be coming soon.

Recently, a fund raiser at the Parker and Colorado Springs Red Robin restaurants raised $270. This included members and their friends who ate at the restaurants on September 28th. 20% of the receipts of people who identified themselves as supporters of DSES were donated to the organization.

We are also in the process of filing for a Property Tax exemption. This increased expense, based on the new building, is our single largest cost in terms of operating the facility. The outcome is not guaranteed, but we are building a strong case for receiving an exemption.

Everyone can help support DSES by shopping at King Soopers (or any Kroger store). See the story below on the **King Soopers Community Awards** program.

Recent Operational Activities

Several important projects were undertaken in the past few months. Bill Miller has written up a report on the activities for this year, which can be found at: **DSES YTD Report**

Here are the past 6 months' activities from that report:

April

• April issue of QST featured DSES's June 2024 rescue of a 30-foot radio telescope, donated by Patti Clark. Elaine Hambly (K0ARR) authored the article. Next step: raising funds to pour the foundation and reassemble the dish.

• Apr 14: Ray Uberecken installed the e-CALLISTO antenna on the tower (controller still needed).

• Apr 19: Site maintenance and prep for the April 26 event.

• Apr 22: Glenn Davis and Lewis Putman tested new mount control software at the site—several anomalies found but integration went well.

• Apr 26: Event organized by Rob McMasters following Santa Fe Trails Days. Mexican buffet and presentations were held for educators and community members.

May

• May 7: Ham Nation podcast featured DSES with Paul Sobon (NO0T) and Bill Miller (KC0FHN). Watch starting at 41:40 at **https://www.youtube.com/watch?v=dGF1JqfRH6M**

• May 8: Site trip for Ethernet, cistern work, and bunker maintenance.

June

• Jun 23: In our science meetings for June, July and August, Engineer Whit Reeve gave a three-part presentation on geomagnetism and his SAM magnetometer. DSES plans to install one at Haswell. Videos are on our YouTube channel.
https://www.youtube.com/watch?v=yulM5hQFN9E

• Jun 24: Work trip—Roger moved the GPS Scintillation Experiment antenna, while Bill coordinated fiber optic cable installation with ESTech. This saved significant cost by piggybacking extra fiber on their cable-burying operation.

July

• Jul 7: Site trip to apply grounding and bonding to the system console, improving reception and lightning protection.

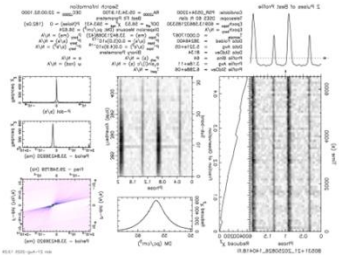
• Jul 23: Site weeding workday. With Rob MacMasters' funding, a rental tractor and brush hog, Rick Hambley cleared the tall weeds across the site.

August

• Aug 10: Site trip—repaired a broken window, Ethernet jacks, and worked on the e-CALLISTO antenna.

• Aug 20: Marge Card, widow of Bob Card, donated a toolbox, tools, and air compressor to DSES.

• Aug 26: Work trip with Dan Lane, Ray Uberecken, RC Teal, and Rick Hambly. Installed 408 MHz feed, successfully detected the Crab Pulsar, then reverted to 1420 MHz feed. Work continued on Ethernet patch panels and e-CALLISTO controller.



September

• Sept 11: Work trip—Paul cleaned the flooded bunker, Bill dug a drainage trench, and ESTech spliced and terminated fiber cables, completing LAN to the bunker. Roger and Ray worked on e-CALLISTO. Weed clearing and building waterproofing were also completed.

After much anticipation, the local communications provider **ESTech**, completed their installation of Fiber Internet in the new building and the bunker. The difference in internet access is astounding. Very low ping delay and rock-solid connectivity. Operating the remote station and science experiments has been vastly improved.

We need your help! If anyone knows of someone who installs or climbs towers, we need assistance in erecting the two towers at each end of the building. The base sections are already placed in concrete. Contact the **Board** if you have information for this project.

Science Projects This Summer

The following reports were provided by Dan Layne:

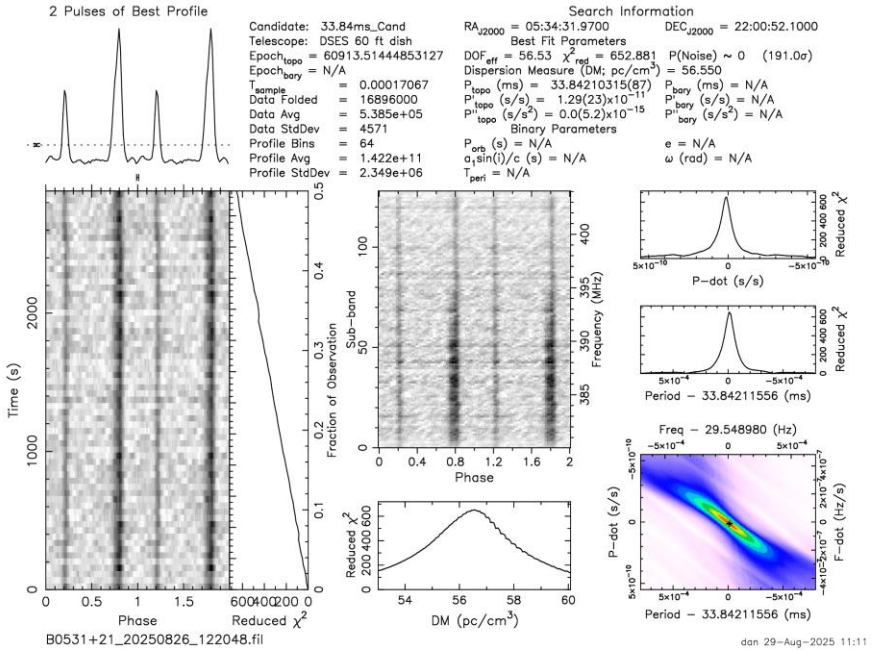
Giant Pulses - First Time for DSES!

On August 26, 2025 four members of the DSES Science Team (Ray Uberecken-AA0L, Rick Hambly-K0GD, Bill Miller-KC0FHN, Dan Layne-AD0CY) successfully detected all three kinds of radio pulses emitted by the Crab pulsar. This pulsar is the visible neutron star in the center of the Crab supernova remnant, shown below in the NASA image combining Hubble and Chandra imagery.

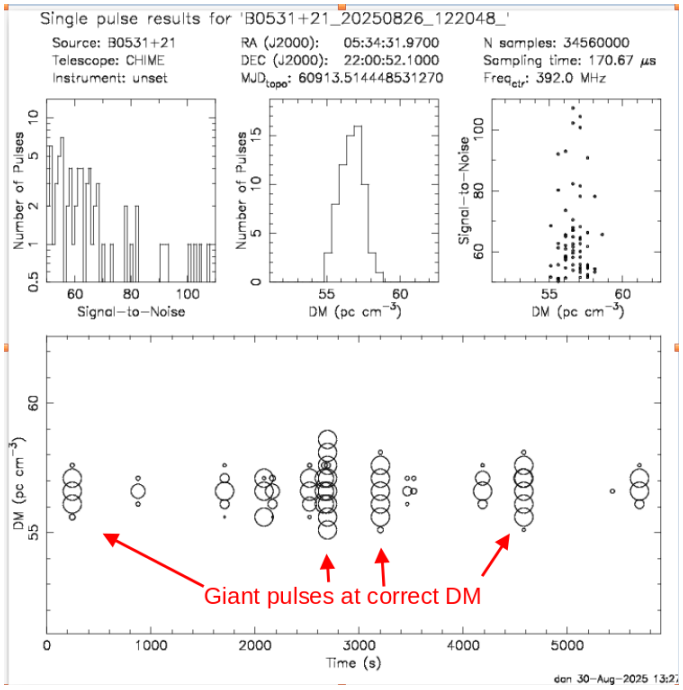
The Crab pulsar, PSR B0531+21, emits a main pulse with a period of 33 msec and a mean flux density of 550 mJy at 400 MHz. A smaller interpulse trails the main pulse by 4/10 of the period (~140°). Additionally, the Crab randomly emits "giant pulses," which are single, narrow pulses that can exceed the mean flux density by factors of 10 or more. Giant pulses are known to be emitted at both the main pulse and interpulse phases of the pulsar's rotation. All three pulse types are generated by the extreme magnetic fields on the neutron star's surface, exceeding 10^{12} Gauss.

Observations of giant pulses can vary daily (mainly due to ISM scintillation), so we planned a six-hour data collection. Since the Crab rises at 2 am and sets at 2 pm this entailed a two-day trip to Haswell. Monday, August 25 Bill and Dan swapped feeds from the 1420/1640 MHz cavity feed to the 408 MHz dual dipole antenna (our previous attempt to detect the Crab at 1420 MHz failed). Then we tuned the SDR gain and found 24 MHz of RFI-free operating frequencies between 380 and 404 MHz. We ran several 10-minute collections on our standard reference pulsar, B0329+54. These are the best pulsar profiles we have seen, thanks to several recent upgrades, including grounding and bonding in the new building, new feed line coax and a new B210 SDR.

Tuesday morning at 6 am we started the Crab data collection. A quick look after 90 minutes revealed some phase drift and phase jumps, so we stopped, reset everything, and started a new run. The second run was cleaner. We collected a total of nearly 6 hours (~62 GB) of high sample-rate filterbank data. Even though we still saw some phase drift (likely due to the fast spin rate of this pulsar) we successfully folded the pulsar data. Both the main and interpulse are shown in the profile below.



So far, we have only analyzed the first 90 minutes of data for single pulses, and several giant pulses were clearly detected, as seen below. For example, the giant pulse at 2,648 seconds has flux 2x greater than the mean of the main pulse. Peak SNR is used to verify the giant pulse has the same dispersion measure as the pulsar. System1 dish tracking worked fine for the data collections. Tuesday afternoon Ray and Bill swapped the 408 antenna back to the 1420 feed. Another DSES first, swapping feeds twice in two days!



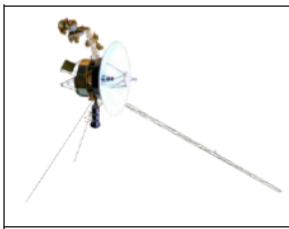
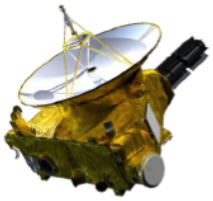
e-Callisto Solar Spectrometer

DSES is installing an e-Callisto solar radio spectrometer to monitor space weather (solar radio bursts and X-ray flares). Our log-periodic VHF/UHF antenna has been installed at Haswell, and the sun tracking system is nearly complete. The TV-tuner based receiver has a frequency range of 45-870 MHz. Data will be uploaded every 15 minutes to a university server in Switzerland and available world-wide for analysis. Data are also mirrored to NASA.

We are looking for someone to install the software, calibrate the system and officially register DSES on the e-Callisto network. The software will run on Windows, Linux or Raspberry Pi, ideally on a low-power, shared computer. This space weather station equipment was funded in part by the ARDC grant for the new building. For more information, including software (which we have), extensive documentation and live data, see **https://www.e-callisto.org/** or **https://www.reeve.com/** .

Deep Space Network Presentation

Alex K6VHF presented information on the Deep Space Network in the August 11th Engineering Meeting. This is an exciting new opportunity for use of our big dish. Here is a link to the video (presentation starts at 18:25 in the video): **DSN Update**

			
VOYAGER - 1	**NEW HORIZONS**	**JUNO**	**LUCY**
NASA	**NASA**	**NASA**	**NASA**
Launched: **1977**	Launched: **2006**	Launched: **2011**	Launched: **2021**
Mission: **Outer Solar System**	Mission: **Pluto & Kuiper Belt**	Mission: **Jupiter**	Mission: **Trojan Asteroids**
Status: **ACTIVE**	Status: **ACTIVE**	Status: **ACTIVE**	Status: **ACTIVE**
Distance: **15,611,500,000mi**	Distance: **5,068,000,000mi**	Distance: 298,042,000mi	Distance: **291,859,905mi**
Speed: **38,000mph**	Speed: **36,000mph**	Speed: **8,700mph**	Speed: **75,325mph**
X-Band: **8420.432MHz**	X-Band: **8415.000MHz**	X-Band: **8404.130MHz**	X-Band: **8445.768MHz**
Antenna: **3.7m**	Antenna: **2.1m**	Antenna: **2.5m**	Antenna: **2.4m**
Polarization: **RHCP**	Polarization: **RHCP**	Polarization: **RHCP**	Polarization: **RHCP**
Gain: **48dB**	Gain: **44dB**	Gain: **44.7dB**	Gain: **44dB**
RF Power: **22W**	RF Power: **12W**	RF Power: **28W**	RF Power: **25W**
FSPL: **318dB**	FSPL: **310dB**	FSPL: **288dB**	FSPL: **284dB**
Signal on Earth: **-227.9dBm**	Signal on Earth: **-225.8dBm**	Signal on Earth: **-199.9dBm**	Signal on Earth: **-196.9dBm**
Signal at DSES: **-165.3dBm**	Signal at DSES: **-163.24dBm**	Signal at DSES: **-137.4dBm**	Signal at DSES: **-134.3dBm**
SNR: -9.7dB	**SNR: -7.7dB**	**SNR: 18.2dB**	**SNR: 21.3dB**

HamClubOnline - Coming Soon

We are looking at moving our membership function to the **HamClubOnline** system. This will simplify managing membership and provide other useful tools in performing critical organization activities – such as elections and information distribution. Updates will be sent to all members as we trial the system with the Board members, then transition to all members. For now, there is nothing that members need to do.

Events

Open House - September 27

ARRL EME Contest – October 11-12; November 8-9

Upcoming Meetings

Engineering Meeting - The second Monday of each month at 6:30pm

Science Meeting - The fourth Monday of each month at 6:30pm

Meeting topics will be announced on **DSES Groups.io**.

The Zoom link for all meetings is:
https://us02web.zoom.us/j/81791954835?pwd=taP2UNWCp8FyVMKBdMh9GuBcD6Daz7.1
Meeting ID: 817 9195 4835
Passcode: 852155

Information

King Soopers Community Rewards

King Soopers has a great community rewards program. This is no cost to you (if you shop at King Soopers). King Soopers is part of the Kroger organization, and all Kroger and affiliated stores are part of this program**. As such, your friends anywhere in the country can also support DSES.** Every little bit helps us to maintain the DSES facility and fund new science experiments. If interested, you may sign up by clicking **here to sign up**. Our King Soopers Organization is The Deep Space Exploration Society or ID YP378.