2026 New Mexico TechFest

Speaker Bios and Presentation Abstracts

(Rev. February 24, 2026)

Presentations

Heating up the Desert: Operating Microwave in the Desert Southwest

by Chuck Claver NJ6D (of Tucson AZ) and Robert Reynolds N7VD (of Mesa, AZ)

Presentation Abstract:

The southwestern deserts of the United States offer a unique radio operating opportunity for those interested in the Amateur microwave frequencies above 1.2 GHz. In this presentation I will use my personal experience on the 10 GHz band to introduce and illustrate what you need to get started, the equipment and tools of the trade, various forms of propagation, what to look for in an operating site, how activity is planned and coordinated, along with what it is like to be out in the field. Operating microwave in the southwest is different than what you might find in the eastern US and Europe. This is owed mainly to the differences in population density as well as environmental factors affecting propagation. Southwest microwave operating is mainly an adventurous outdoor activity searching for, finding and operating from higher elevations that can cover wide swaths of territory. Getting started on 10GHz or other microwave bands is not as hard as it might seem, but it is different than HF or VHF/UHF – these differences will be discussed towards those new to the microwaves. There are many excellent resources available on-line, but importantly there are many individuals, groups and clubs here in the Southwest that can help new comers get started and assist even a seasoned veteran's skills. Lastly, I will touch on the ultimate microwave distance challenge – Earth-Moon-Earth. Operating microwave is different and challenging, but exciting and rewarding to those willing to give it a go. It my hope is that this presentation will provide some encouragement to turn your interests into action and get started.

Speaker Bio:

Charles (Chuck) Claver, PhD, NJ6D, was first licensed in 1977 as KA6EDC at age 15 while living in the San Francisco Bay Area. He was briefly KB6YF before receiving his current call in the early 1980's. In 1984 he moved to Austin Texas to finish his undergraduate schooling at the University of Texas. After graduating in 1987 with his bachelor's degree he continued his schooling in Austin another 6 years. At the end of 1995 he completed his doctorate degree in astronomy and astrophysics. He then moved to Tucson, AZ to work at the National Optical Astronomy Observatory. While at NOAO he served as the telescope optical scientist for Kitt Peak National Observatory. He then devoted his efforts to the Large Synoptic Survey Telescope project, now the Vera C. Rubin Observatory and over time devoted all his professional efforts to developing this new generation system for optical surveys. He currently serves at the Rubin

Observatory System Scientist. His main radio interests are in antenna design, chasing DX, propagation, and contesting. More recently he has taken an interest in VHF/UHF and microwave systems. He is active on 160M though 10 GHz. Chuck is married to Jennifer and has a son, Ryan, living in Montana.

Robert Reynolds, N7VD, was first licensed as a Technician in 1970 at age 13 with the call, WBØCIS. Along with his Dad, they home-brewed a full 6 meter AM/SSB station and was quite active in the Kansas City, Missouri area. This set him on a path to a 40-year career with McDonald Douglas/Boeing as a Production/Manufacturing Engineer for electrical testing. He studied at Oklahoma State University and graduated in 1988. As technology advanced the electrical testing requirements, he took addition classes from Arizona State University in high speed data compression/transmission, and fiber optics in the late 1990s. He retired from Boeing in 2021. His interest in Amateur Radio rekindled while in Oklahoma and re-licensed as KB5PCN in 1990. As a member of the Tulsa Amateur Radio Club, he was instrumental in building and installing their first 2 meter repeater. He moved to Mesa, Arizona in 1994 following a military contract work transfer. There, he upgraded his license with the present call, N7VD. His current interests include VHF/UHF/SHF/Microwave weak signal work, light contesting, and microcontrollers. He is married to his wife of 29 years, Marti, and has a step daughter, Elaine living in Georgia, and a son Ryan.

Edge of Space Sciences' (EOSS) Adventures and Accidental Science During the Last 12 years of High-Altitude Balloon Flights

by Nancy Koos KØNKK (of Conifer, CO) and Jim Langsted KCØRPS (of Golden, CO)

Presentation Abstract:

Edge of Space Sciences (EOSS) has launched 390 balloons since 1990. In the last 12 of these years, 186 balloons have carried 987 payloads built by 17,165 students, to the "The Edge of Space." In addition to a LOT of student science, EOSS members have analyzed flight data; and built, flown, and refined flight hardware to support the successful launch, tracking and recovery of these missions. This talk will highlight some stories of our experiences during these 133 flight events, and some of the "accidental" science that our club members have created to successfully accomplishing these flights. Oh, and Pico Balloons too.

Speaker Bio:

Nancy Koos, KØNKK, obtained her license so she could use HAM radios when tracking for EOSS with her husband KØJWB (SK). Nancy started working with the EOSS launch site teams in 2019 and is familiar with balloon fill, stringing, and tracking. She is one of the Flight Coordinators responsible for working with clients for successful launches and recoveries, she is also Secretary for EOSS. When not flying HABs, Nancy travels, and enjoys time walking her dog.

Jim Langsted, KCØRPS, was licensed as a Novice, WN7UYQ, in 1972, while a freshman in college. When this two-year non-renewable license expired, it was 30 years before he earned his General as KCØRPS. In 2003 his elmer took him to an Edge of Space Sciences balloon launch and

he has been hooked ever since. Jim has participated in over 300 balloon launches and recoveries. Recently he helped the club launch three Pico Balloons that have each circumnavigated the earth in excess of ten times. Jim is currently the EOSS club president.

Dissecting the New FCC 60 Meter Allocation for Amateur Radio

by Jim Frazier KC5RUO (of Albuquerque, NM)

Presentation Abstract:

This topic presents the new FCC amateur radio 60 meter allocation, 5.3515 - 5.3665 MHz band, that goes into effect February 13, 2026. He'll present how the ruling to not exceed a radiated power exceeding 9.15 W ERP was derived and how to use the KC5RUO generated table-based tool to assist the amateur radio operator set their HF radio transmit power to meet the 9.15 watt ERP.

Speaker Bio:

Jim Frazier, KC5RUO, is a retired USAF communications engineering officer and Honeywell Avionics project engineer. Jim holds an EXTRA class license and spends most of his time as the Bernalillo County ARES Emergency Coordinator and Air Force MARS radio operator. Jim's favorite amateur radio recreational modes are FT8, FT4, and the Winlink digital emergency communication modes.

Using ChatGPT and OpenSCAD to Generate 3D Printer STL Files

by Ed James KA8JMW (of Edgewood, NM)

Presentation Abstract:

OpenSCAD is a free, script-based application for creating 3D computer-aided design (CAD) models using text rather than traditional graphical tools. This presentation demonstrates how ChatGPT, an artificial intelligence tool, can be used alongside OpenSCAD to generate and refine 3D models, producing STL files ready for 3D printing. Attendees will see practical examples of using AI to speed up design workflows and lower the barrier to entry for parametric modeling.

Speaker Bio:

Ed James KA8JMW first earned his novice license in 1978. Since then he's savored from the broad palette that amateur radio offers. Ed's activities have included the design and fabrication of various projects from DC to daylight, QRP, net operations, traffic handling, rag chewing, contesting, DXing, transmitter hunting, search and rescue, public service communications, ARES, youth promotion, satellite operations, EME, along with mentoring many new hams.

Ed has served as New Mexico Section Manager and New Mexico Assistant Section Manager. Ed currently serves as an Assistant Director of ARRL Rocky Mountain Division with a focus on

emerging technologies and as the Technology Director for Rocky Mountain Ham Radio (New Mexico).

Multicouplers and Why You Need One

by Brian Adams KD7BJF (of Albuquerque, NM)

Presentation Abstract:

This presentation introduces the concept of sharing one RX antenna to multiple radio receivers using a multicoupler, why they are needed, and several options on how to implement its use, including an option to repurpose common and low-cost equipment from Cable TV systems. The presentation will include a discussion of my journey, and technical plots/data from bench tests to support the discussion.

Speaker Bio:

Brian Adams, KD7BJF, was first introduced to Ham radio as an early teen by his mentor Frank Smith, AHØW. His fascination with radio and communications systems has grown ever since. This interest has been a constant influence as a hobby, enabler of personal adventure, and professional career.

Just like ham radios, he can have too many and never enough scanners at the same time. Discovering all sorts of signals has been a key interest for the past 9 years after the fateful decision to get his first scanner radio.

Overview of Deep Space Exploration Society (DSES) and Support to NASA's Upcoming Artemis Mission

By Bill Miller KCØFHN, DSES Vice President (of Colorado Springs, Colorado)

Presentation Abstract:

On the Eastern plains of Colorado is a unique facility for amateur radio astronomers, and amateur radio enthusiasts. The Paul Plishner Radio Astronomy and Science Center where the centerpiece is an 18-meter (60-foot) radio telescope owned by the Deep Space Exploration Society (DSES).

This presentation will cover the history of the telescope and give conference attendees a photographic tour of the site while highlighting the unique resources that the DSES offers its members and STEM outreach to any interested students of all ages. This will include a visual tour of our new operations center building funded by a grant from the Amateur Radio Digital Communications group, or ARDC.

The presentation will cover our many radio and radio astronomy experiments including our remote amateur radio station facility and Earth-Moon-Earth (EME or “Moon Bounce”)

operations and contests as well as our latest endeavors to track the Artemis II and Orion Spacecraft and other deep space probes.

Speaker Bio:

Main Career: 35 years Computer Storage Hardware and Power Systems engineering and management. Positions as HW Architect, Program and Project Manager, Group Engineering Manager, International MFG Startup Liaison and Consulting Design Engineer for Seagate, Xyratex, Infinite Power Solutions, Jabil Circuits, Storage Networking Industry Association, Quantum, Hewlett Packard, Compaq, Digital Equipment Corp, and General Instruments. 5 years Aerospace Systems engineering with Lockheed/Martin Marietta Aerospace. Career emphases in Switch Mode Power Conversion and hardware systems design. Considerable experience in solar systems engineering, ambient micro energy harvesting and micro power radio applications.

Other Endeavors: 10 years in Deep Space Exploration Society, DSES, as President, Vice President and Secretary, Amateur Radio - KC0FHN, 4 years in Broadcast Radio Engineering. Graduated University of Southern Colorado/CSU Pueblo.

Goals: Have Fun Doing Something Unusual!

Demonstrations

10 GHz Operating and Earth-Moon-Earth Demonstration

by Chuck Claver NJ6D (of Tucson AZ) and Robert Reynolds N7VD (of Mesa, AZ)

Demonstration Abstract:

In conjunction with the "*Heating up the Desert: Operating Microwave in the Desert Southwest*" TechFest presentation, we will conduct a live demonstration of operating 10 GHz terrestrially and Earth-Moon-Earth. As conditions permit we will demonstrate the operation of NJ6D's 1-meter transportable 10 GHz dish system. The demonstration will include a technical description of the signal path identifying key components and the role each plays in producing an integrated system suitable for microwave communications. As conditions permit we will demonstrate the reception of thermal noise between warm objects (e.g. buildings and mountains) and the cold sky, reception of a 10 GHz beacon (location TBD) and, if possible, 2-way terrestrial and digital Earth-Moon-Earth communications. For the EME demonstration a handful of schedules will be prearranged with stations in the United States, Canada and Europe. The demonstration is expected to last an hour or so, shortly following the main technical program during moonrise above the Sandia mountains.

Speaker Bio:

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A First Look at the µSDX: an 8-band Low Power (QRP) HF Transceiver with Open Source Firmware

by Larry Goga, AE5CZ (of Albuquerque, NM)

Demonstration Abstract:

The µSDX (Micro Software Defined Transceiver) is an open-source, ultra-compact, and highly efficient QRP Software Defined Radio Transceiver designed for amateur radio operation on the HF bands (typically 80m-10m) with 5W PEP output. It uses an ATMEGA328P microcontroller to generate SSB and CW signals via digital signal processing. It is very suitable for WSJT-X operation and especially FT-8.

The open source firmware is the work of Guido Ten Dam, PE1NNZ and Manuel Klaerig, DL2MAN. It was created using the Arduino IDE and is available for free download from the GitHub repository. This availability makes this radio an excellent teaching and learning tool for those interested in the finer points of Software Radio Development.

The µSDX is available from both Chinese and American suppliers at prices ranging from $70 to $140 USD and is available in several design formats. These versions will be shown on the posterboard and their differences will be discussed. The "BULUTI" black-button version will be available for inspection and will be shown in operation running FT-8 on 20 Meters.

Speaker Bio:

Larry Goga AE5CZ began his interest in electronics while still in high school. He worked for over 25 years in the motion picture industry in Los Angeles starting as a sound recordist and ended as the Director of Audio Engineering at 20th Century Fox Studios. Larry first received his amateur radio license in 2007. He was recently the President of the Duke City Hamfest Planning Committee for the 2024 event. Larry is a member of the Frank Warren Instructor Group and has taught amateur radio classes at all three levels. Now retired, Larry uses his time and his equipment to learn the intricacies of modern RF Technology.

Posterboards

Power Restrictions on UHF Operation in New Mexico

by Jim Lommen KC7QY (of Socorro, NM)

Posterboard Abstract:

The 420-450 MHZ and 902-928 MHz bands are allocated to amateur radio operation on a secondary basis subject to not interfering with the primary Federal users. As such the FCC has set limits and restrictions to amateur radio operations in New Mexico that many hams are not fully aware of. Primary of these restrictions is that the entire 420-450 band is restricted to 50 watts PEP within New Mexico and Arizona. The 902 band is prohibited for amateur use in portions off New Mexico and power limited in areas outside of White Sands Missile Range (WSMR).

Speaker Bio:

Jim Lommen, KC7QY. Licensed since 1979, holds an amateur extra class license. Major ham radio interests are DXing, contesting and weak signal VHF/UHF operation. Currently ARRL NM Section Technical Coordinator and ARES EC for Socorro county. He has held several Section and ARES appointments in Wyoming, Colorado and now New Mexico. He has been an active member and officer in the Socorro Amateur Radio Association since relocating to New Mexico in 2008.

C-SABS: The Central-Southern Arizona Beacon System

by Chuck Claver NJ6D (of Tucson, AZ); Robert Reynolds N7VD (of Mesa, AZ); Troy Hall WA7ELN (of Oracle, AZ); Albert Lambson KG7PTP (of Chandler, AZ); and Scott Swanson K6PYP (of Tucson, AZ)

Posterboard Abstract:

The Central-Southern Arizona Beacon System (C-SABS) is a set of beacons operating over the full range of amateur VHF/UHF+ Microwave bands. The idea of C-SABS was formed following the loss of Arizona's VHF/UHF beacons run by Tom Whitted (N7GP) following a monsoon storm several years ago. Since that time the Arizona VHF/UHF has been without beacons to test and optimize their radio systems. Several of us in the AZ VHF/UHF community-initiated discussion regarding beacon replacements soon after the loss at Tom's QTH. From these discussions we have developed a beacon system utilizing the RF Zero synthesizer/GPS/Control boards developed by Bo Hansen et al. (OZ2M). The RF Zero boards can be programmed to produce any frequency from ~2 KHz to ~300 MHz, manage the sequencing and timing for the beacon and generate digital tones for one of several different modes using an ARM processor and the Arduino IDE. The architecture of C-SABS utilizes two RF Zero Boards programmed on 144 MHz and 222 MHz to serve is the primary beacons for these bands as well as IFs to be mixed with the appropriate Local Oscillator for the other bands. Signals for each band are amplified to produce between 5-10W outputs which are subsequently fed into band specific horizontally polarized omni-directional gain antennas. Each beacon will operate a sequence of CW + Carrier + Q65-15C over a 2-minute cycle. During 2025 our small group reach critical mass when we partnered with the Radio Ridge Repeater Club and received permission to utilize their site at 9170 ft on Mt Lemmon north of Tucson, AZ. With this site the beacons will have wide coverage over much of the southwest US including AZ, CA, NV, UT, CO, NM, TX and Mexico. The initial deployment of C-SABS will include beacons for 144, 222, 432 and 1296 MHZ. A separate beacon for 10 GHz is also part of the C-SABS development. Final assembly and testing for C-SABS will be conducted the winter of 2025 with an expected installation on Mt Lemmon Spring 2026. Here we describe the technical development of the C-SABS hardware, antennas, site preparations and testing.

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