GREEN BANK STAR QUEST XVI
PROGRAM SCHEDULE

JUNE 26 – 29, 2019

http://caacwv.com/

http://greenbankstarquest.org/

	GENERAL INFORMATION	
TIME	**EVENT**	**LOCATION**
9:00am-7:00pm	Registration/Welcome	Registration Desk
9:00am-6:00pm	Vendor Area Open	Visitor Center
8:30am-7:00pm	Starlight Cafe	Visitor Center
8:30am-7:00pm	Gift Shop	Visitor Center
9:00am-6:00pm	GBO Hourly Tours / Gift Shop	Visitor Center
10:00am-2:00pm DAILY	Daily Solar Observing (Weather Permitting)	Visitor Center
	Reminder: Check at the registration desk for daily schedule updates / revisions	
	Don't forget to purchase Raffle Tickets! $1.00 each/$5.00 for 6	
	Check out our Star Quest T-Shirts HOODIES AVAILABLE STAR QUEST MEMORABILIA	
	MEAL TICKETS AVAILABLE	Starlight Cafe
7:30am-9:00am	BREAKFAST Buffet Style	GBO Cafeteria
	LUNCH On Your Own Consider Visiting the Starlight Cafe	
5:00pm-6:30pm	DINNER Buffet Style	GBO Cafeteria
Dusk till Dawn	Observing	Your Site
8:30pm-10:00pm	Field Session Weather Permitting	Field

	WEDNESDAY- JUNE 26, 2019	
TIMES	**EVENT**	**Location**
9:30am-11:00am	GBT Tour (sign-up sheet) (Three Groups of Seven)	Meet at Registration Desk
10:30am-11:30am	Imaging Faint Deep-Sky Objects with a DSLR-Galaxies and Nebula Brent Maynard	Faraday Computer Lab
12:00pm-1:00pm	Lunch Break	
1:30pm-2:30pm	Flying Apollo to the Moon (Flight Simulator) Tim Hamilton (sign-up sheet)	Faraday Computer Lab
2:15pm-3:15pm	Science Fiction-to-Fact of the Moon Caitlin Ahrens-Wiles	Classroom
2:30pm	40' Radio Dish Orientation #1 GBO Staffer 20 person max. (sign-up sheet)	Meet at Registration Desk
2:30pm	High Tech Tour of the GBT Control Room (sign-up sheet)	Meet at Registration Desk
3:30pm-5:00 pm	Observing in the Moonshine Attendees Must Bring Moon Maps (Certificate Upon Completion) Terry Mann	Classroom
5:00pm-6:30pm	Dinner Break	
7:00pm-8:00pm	ASTEROIDS: THEIR DISCOVERY, COMPOSITION, AND OBSERVATION DR. TERRY TREES KEYNOTE	Auditorium
11:00pm-3:00am	40’ Dish Observation Sessions	40’ Radio Dish

	THURSDAY- JUNE 27, 2019	
TIMES	**EVENT**	**LOCATION**
8:30am-10:00am	GBT Tour (sign-up sheet) (Three Groups of Seven)	Meet At Registration Desk
9:30am-10:30am	Imaging Techniques and Equipment for Lunar and Planetary Images Brent Maynard	Faraday Computer Lab
9:30am-10:30am	Meteorites Dave Holden	Classroom
10:00am-11:30am	Children's Activities Moon Lander/Geology	Star Lab Room
10:45am-11:45am	Binoculars 101 Steve Boerner	Classroom
11:00am-12:00pm	Introduction to Radio Astronomy Sue Ann Heatherly, GBO	Faraday Computer Lab
11:00am	40' Radio Dish Orientation #2 GBO Staffer 20 person max. (sign-up sheet)	Meet at Registration Desk
12:00pm–1:00pm	Lunch Break	
1:30pm-3:00pm	Children's Activities Moon Lander/Geology	Star Lab Room
1:15pm-2:15pm	Mapping the Moon From the Beginning Bob Royce	Classroom
1:30pm-2:30pm	Flying Apollo to the Moon (Flight Simulator) Tim Hamilton (sign-up sheet)	Faraday Computer Lab
2:30pm-3:30pm	Listening to Planet Heartbeats: Planetary Seismology Caitlin Ahrens-Wiles	Classroom
2:30pm	40' Radio Dish Orientation #3 GBO Staffer 20 person max. (sign-up sheet)	Meet at Registration Desk
3:45-5:00pm	MERAL Meeting (Mid-East Regional Astronomical League) Terry Trees	Classroom
4:00pm	High Tech Tour of the GBT Control Room (sign-up sheet)	Meet at Registration Desk
5:00pm-6:30pm	Dinner Break	
7:00pm-8:00pm	APOLLO LANDING SIGHTS AND THEIR STORIES TERRY MANN KEYNOTE	Auditorium
11:00pm-3:00am	40' Dish Observation Sessions	40' Radio Dish

	FRIDAY- JUNE 28, 2019	
TIMES	**EVENT**	**LOCATION**
9:30am-10:30am	WFIRST: Our Next Window on the Universe Nathan Tehrani	Classroom
10:00am-11:30am	Children's Activities Squishy Circuits/WeDo	Star Lab Room
10:00am-11:00am	Using Telephoto Lenses for Astrophotography: What Specs to Look for and What to Avoid Brent Maynard	Faraday Computer Lab
10:45am-11:45am	Rocket Boy Jimmie O'Dell Carroll	Classroom
11:00am-12:00pm	Light Pollution Filters for Deep Sky Imaging Jeff Ball	Faraday Computer Lab
11:00am	40' Radio Dish Orientation #4 GBO Staffer 20 person max. (sign-up sheet)	Meet at Registration Desk
12:00pm–1:00pm	Lunch Break	
1:00pm-2:00pm	Binoculars 101 Steve Boerner	Classroom
1:00pm-2:00pm	Meteorite Etching Dave Holden	Basement
1:00pm-3:00pm	Children's Activities Rockets	Star Lab Room
1:15pm-2:15pm	Flying Apollo to the Moon (Flight Simulator) Tim Hamilton (sign-up sheet)	Faraday Computer Lab
2:15pm-3:15pm	The History of Astronomy John Taylor	Classroom
2:30pm	40' Radio Dish Orientation #5 GBO Staffer 20 person max. (sign-up sheet)	Meet at Registration Desk
3:30pm-4:30pm	Inventing the Achromatic Lens or Almost Colorless Bob Royce	Classroom
4:00pm	High Tech Tour of the GBT Control Room (sign-up sheet)	Meet at Registration Desk
5:00pm-6:30pm	Dinner Break	
7:00pm-8:00pm	LUNAR EXPLORATION IN TODAY'S WORLD: THE LEGACY OF APOLLO DR. G. WESLEY (WES) PATTERSON KEYNOTE	Auditorium
11:00pm-3:00am	40' Dish Observation Sessions	40' Radio Dish

	SATURDAY- JUNE 29, 2019	
TIME	**EVENT**	**LOCATION**
9:30am-10:00am	GROUP PHOTO	Outside Visitor Center
10:30am (after photo)	Children's Activities Rocket Launch	Meet in Field
11:00am-12:00pm	Moon Rock Identification Lab Josh Revels	Classroom
11:00am-12:00pm	Software Tools and Techniques to Process Your Lunar, Planetary, and Deep-Sky Images Brent Maynard	Faraday Computer Lab
12:00pm–1:00pm	Lunch Break	
1:00pm-2:00pm	Moon Rock Identification Lab Josh Revels	Classroom
1:00pm-2:00pm	Flying Apollo to the Moon (Flight Simulator) Tim Hamilton (sign-up sheet)	Faraday Computer Lab
1:00pm	Children's Activities Solar System Spray Paint	Star Lab Room/Outside Visitor Center
2:15pm-3:15pm	Stellar Archeology: The Race to Find the Oldest Stars in the Universe Dr. Michelle Shinn	Classroom
3:30pm–5:00pm	What is a Planet? Defining the Undefinable Mark (Indy) Kochte Featured Speaker	Classroom
4:00pm	High Tech Tour of the GBT Control Room (sign-up sheet)	Meet at Registration Desk
5:00pm–6:30pm	Dinner Break	
7:15pm–8:30pm	THE ONCE AND FUTURE MOON DR. SHANE LARSON KEYNOTE	Auditorium
8:30pm–10:00pm	Raffle Drawing / Certificate Awards MUST BE PRESENT TO WIN	Auditorium

	SUNDAY- JUNE 30, 2019	
7:00-10:30am	Sunday Morning Breakfast	Visitor Center Starlight Café

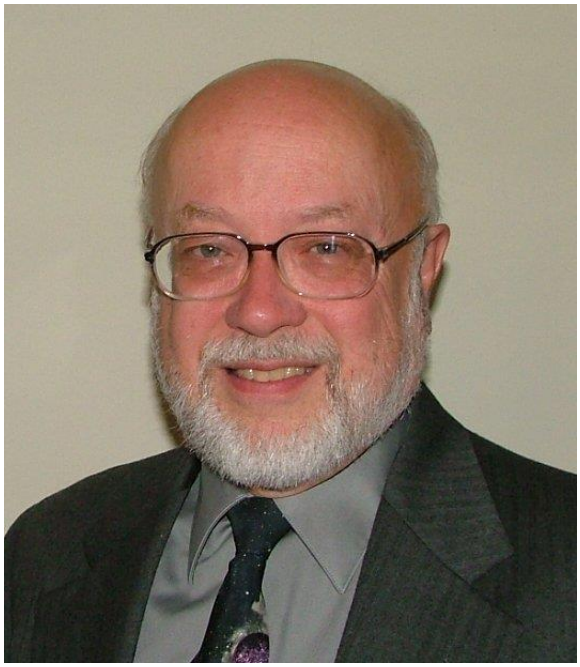
HOLD THE DATE FOR STAR QUEST XVII:

DR. TERRY N. TREES– Keynote

WEDNESDAY- JUNE 26, 2019

7:00 pm – 8:00 pm

BIO



Dr. Terry Trees spent the first 20 years of his career in public education, as a science teacher, a counselor and as an assistant principal. The last 20 years of his career were spent as a computer network engineer.

Terry also served as an Adjunct Professor of Astronomy and Physical Sciences for a small western PA university where he taught courses in astronomy, environmental sciences and information technology, both at the undergraduate and graduate levels.

Terry is a member of the Royal Astronomical Society of Canada, the Amateur Astronomers Association of Pittsburgh, A.L.P.O, the A.A.V.S.O., the Webb Society and the Astronomical League. He has served as an officer in several of these organizations and is currently the Chair of the MidEast Region of the Astronomical League, its Coordinator of the Urban Observing Program and is also the AL's Director of the Celestial Savings Program. Fearing he will fall into an "observing rut", Terry also attempts to remain active in the Astronomical League's many Observing Programs. Terry is the author of "Observing (the Solar System's) Minor Moons", in the February, 2015, issue of *Sky and Telescope* Magazine.

Always in search of darker observing locations, Terry and his family have traveled to many regional star parties in the U.S. and Canada where he has lectured on a number of astronomical topics.

TERRY MANN – Keynote

THURSDAY- JUNE 27, 2019

7:00 pm – 8:00 pm

BIO

My quest to capture the "Elusive Light" of the night sky has drawn me to remote locations in both hemispheres. It has immersed me into the beauty and mystique of our celestial and natural world. Imaging both has proven to be challenging and exhilarating. From minus forty degree temperatures in Alaska while imaging the aurora borealis to the one hundred and thirty-two burning degrees of Egypt to image the Venus Transit. Standing six feet above sea level in the Everglades National Park to image wildlife to a breathtaking bus ride up the Andes Mountains to a seventeen thousand foot summit. Some of my best experiences are realized while standing far away from civilization under the canopy of stars, in the still of the night. The simple act of walking outside, slowing down, looking and listening can technically make such a difference in what you see.

I have traveled to many places to view celestial events, such as, Australia, to view the Southern Hemisphere, Aruba to view a total eclipse, and Bolivia as a speaker for the Southern Skies Star Party and to view the Southern Hemisphere.

Imaging subjects other than people requires a connection to nature. Here you work with nature's schedule, not your own. You do not create the images. The images are there if you know how to see them and capture that moment. For me, this is the best kind of imaging.

My images have been seen in local newspapers, television, magazines and websites such as, Astronomy magazine, Sky and Telescope magazine, the Reflector magazine, Spaceweather.com, and Space.com. I have exhibited in art galleries and museums. I was selected as a First Light Observer at the Smithsonian Air and Space Museum and had three of my images placed in the *Explore the Universe* gallery. I have spoken at various star parties, organizations and events. I have held workshops at Sally Ride Science Festivals at the University of Michigan.

I have had articles published in *Astronomy* magazine, "How Terry Mann Images Earth and Sky"; *Explore Scientific*, "Chasing the Aurora", Sky's Up Magazine, "Astrophotographer, Terry Mann", and various articles in the *Reflector* magazine published by the Astronomical League.

Currently, I am the President of the Ohio chapter of the International Dark-Sky Association. I am also Chair of the Great Lakes Region of the Astronomical League. I have served as Secretary, Vice President and President of the Astronomical League, an Organization of about 18,000 amateur astronomers. I have also served as the amateur astronomer on the Board of Directors at the Astronomical Society of the Pacific and chaired astronomical conferences.

DR. G. WESLEY (WES) PATTERSON– Keynote

FRIDAY- JUNE 28, 2019

7:00 pm – 8:00 pm

BIO

Dr. G. Wesley Patterson is a planetary scientist at the Johns Hopkins University Applied Physics Laboratory. His research focuses the geology of the Moon and icy satellites of the outer solar system.

He is the principal investigator of the Miniature Radio Frequency (Mini-RF) instrument on the NASA Lunar Reconnaissance Orbiter (LRO). Mini-RF is a Synthetic Aperture Radar (SAR) that is being used to better understand the scatter properties of the lunar surface and to search for water (in the form of ice) in the lunar subsurface.

MARK “INDY” KOCHTE– Featured Speaker

SATURDAY- JUNE 29, 2019

3:30 pm – 5:00 pm

BIO

Mark “Indy” Kochte had always been interested in space and astronomy since he was a pre-teen. To that end, he pursued a degree in Astronomy & Physics from the Ohio State University, and in 1988 joined the Space Telescope Science Institute prior to launch of the Hubble Space Telescope, where he was instrumental in performing the data processing and archiving for Hubble. After 17 years he transitioned over the FUSE (Far Ultraviolet Spectroscopic Explorer) mission, where he learned to tackle the unique challenges of planning and scheduling of the ailing ultraviolet-viewing space telescope. In 2006 he joined the MESSENGER mission as a Payload & Mission Operations Specialist, sequencing critical instrument and spacecraft commanding until the spacecraft’s sudden and ultimate end impact-on-Mercury fate on April 30th, 2015. Concurrently, late summer 2014, he joined the ranks of the New Horizons mission as a Mission Analyst to perform similar critical sequencing of the spacecraft as on MESSENGER. In 2016 Indy took a year-long science sabbatical from mission operations to work with the CRISM (Compact Reconnaissance Imaging Spectrometer) science team, an instrument on the Mars Reconnaissance Orbiter, to identify ancient deltas and alluvial fans on Mars and identify potential landing sites for the next Mars lander. In 2017 he once again returned to mission operations as the New Horizons team began prepping for the ultimate exploration of our solar system: the flyby of Kuiper Belt Object MU69 (Ultima Thule) and whatever adventures lay beyond.

Throughout his tenure in space mission operations, Indy has published a half a dozen papers on spacecraft design and mission operations, as well as co-authored a dozen additional papers on spacecraft design, mission operations, and science analysis results of early exoplanet research.

Not being an all-work/no-play kinda guy, in his spare time, when not staring at the stars, Indy can be found exploring the world we live on. In addition to having authored the rock climbing guidebook “Climb Maryland!” (and is currently working on a larger second edition), he is often out scaling cliffs from Maryland to Thailand, mapping cave systems in West Virginia, mountain climbing in the Rocky Mountains or Cascades, diving for fossilized Megalodon shark teeth (or to just look at the pretty fish) in the Atlantic or Caribbean, working on various time-lapse and astrolapse photography projects, or generally capturing moments in time by photographing the world around us. No moss gathers under his feet!

DR. SHANE LARSON – Keynote

SATURDAY- JUNE 29, 2019

7:15 pm – 8:30 pm

BIO

Shane Larson is a research associate professor of physics at Northwestern University, where he is the Associate Director of CIERA (Center for Interdisciplinary Exploration and Research in Astrophysics). He works in the field of gravitational wave astrophysics, specializing in studies of compact stars, binaries, and the galaxy. He works in gravitational wave astronomy with both the ground-based LIGO project, and the future space-based detector LISA.

Shane grew up in eastern Oregon, and was an undergraduate at Oregon State University where he received his B.S. in Physics in 1991. He received an M.S. in Physics (1994) and a Ph.D. in theoretical physics (1999) from Montana State University. Before moving to Northwestern, he was a tenured associate professor of physics at Utah State University. He is an award winning teacher, and a Fellow of the American Physical Society.

Shane is also an avid amateur astronomer, observing with two homebuilt Dobsonian telescopes, named EQUINOX and COSMOS MARINER. He currently lives in the Chicago area with his wife, daughter and cats. In addition to astronomy, he enjoys hiking, mountain biking, and geocaching. He also collects Legos, fountain pens, and telescopes. He contributes regularly to a public science blog at writescience.wordpress.com, and tweets with the handle @sciencejedi .

GUEST SPEAKERS:

Caitlin Ahrens-Wiles: Doctorate Student, Space and Planetary Sciences, University of Arkansas

Jeff Ball: President, Jeff Ball Photography

Steve Boerner: Astronomical League Master and Binocular Master Observer; Astronomical League Citizen Science Committee; High School Chemistry Teacher; Teacher of the Year; Saint Louis Media Director of the Year

Jimmie O'Dell Carroll: Rocket Boy

Tim Hamilton Ph.D.: Professor of Physics, Shawnee State University, Coordinator of the Clark Planetarium

Sue Ann Heatherly: Senior Education Officer, Green Bank Observatory

David Holden: The Meteorite Man

Mark " Indy" Kochte: New Horizons Mission Analyst

Dr. Shane Larson: Research Associate Professor KF7W0Z; Associate Director Northwestern University Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA); Fellow, American Physical Society

Terry Mann: Past President of the Astronomical League, Vice-President of the Miami Valley Astronomical Society, Astro-imager, Aurora Chaser

Brent Maynard-MS: Director - Enterprise Applications, Marshall University Computing Services

Dr. G. Wesley Patterson: Planetary Exploration Group (SRE), Space Exploration Sector (SES), Johns Hopkins University Applied Physics Laboratory

Josh Revels: NASA Education Specialist

Robert Royce: Optician, Telescope Maker, Telescope Historian

Dr. Michelle Shinn: Program Manager for Industrial Concepts, Office of Nuclear Physics, Office of Science US Department of Energy

John Taylor: Vice- President, Central Appalachian Astronomy Club

Nathan Tehrani: Guidance Navigator and Control Engineer, NASA IV&V

Terry Trees: Chairman, Mid-East Regional Astronomical League

NOTES