SK STEUR ASTRONOMIC NO SS TAAA DESERT SKIES BULLETIN

1954

Observing Our

Desert Skies

Since

1954

SOCIATION

April 2022 **Membership Meeting**

TAAA's next general member meeting will be held online on Friday, April 1, 2022. The Main Presentation starts at 6:30 PM, followed a Members Only meeting with an Election 2022 introduction of club leadership nominees along with other subjects. The Main Presentation is open to the public via Facebook at https://www. facebook.com/TucsonAstronomy/. Members should attend the meeting via Zoom. The Zoom link will be sent to members before the meeting. Main Presentation at 6:30 AZT

Resolving Black Holes with the Event Horizon Telescope

Black holes, predicted almost a century ago by Einstein's General Theory of Relativity, were believed to power some of the most energetic phenomena in the Universe. However, their compact sizes make them extremely difficult to resolve. In 2017, the Event Horizon Telescope (EHT) collaboration brought together many radio telescopes around the world to form an Earth-size virtual telescope, and successfully captured the first ever images of a black hole--in the center of galaxy M87. This result enables astrophysicists to study the detailed astrophysics around black holes and test General Relativity itself. In this talk, presenter Chi-kwan Chan will cover the theoretical background of black holes, the observation technique used to resolve them, and some of the open questions in black hole astrophysics.

Bio: Chi-kwan "CK" Chan is a computational astrophysicist working with cutting edge technologies to advance both theoretical and

April 1 @ 6:30 pm - 9:00 pm

www.tucsonastronomy.org



observational research. He has developed new algorithms to study magnetohydrodynamic turbulence, used graphics processing units (GPUs) to accelerate general relativistic ray tracing, designed cloud computing infrastructures to handle big observational data, and applied machine learning algorithms to speed up and automate data processing. Some of his active projects include simulating and understanding accretion disks, capturing images of black holes, and visualizing astrophysical simulations in virtual reality. He's also a true wildcat, having received his bachelors and doctoral degrees from the University of Arizona. He is a Data Science Fellow at the UA Data Science Institute and an affiliate member of UA's Applied Math GIDP.

Members Only Meeting after main presentation: The NVRC will introduce the nominees for the club leadership election to be held at the May General Membership Meeting.

This will be followed by Zoom breakout rooms discussing various subjects at members' discretion.

March 2022

As we are moving toward spring and summer, TAAA outreach has been busy. Starry Messengers completed efforts to offer a number of activities in the Science City section of the Tucson Festival of Books and is now focusing on the upcoming Astronomy Festival activities. Volunteers for TAAA paid and non-paid star party events have been in high demand in spite of all the weather fluctuations we have been having. As COVID has diminished, our dark sky site activities are expanding with the first public opening since Covid of the Evening Under the Stars Program (for the residents of Cochise County) and on a different date a Star B Que at CAC being planned. In addition a paid star party of about 25 at TIMPA is upcoming. (The plan also is to have seating with bench repairs and new picnic tables added at TIMPA in time for that star party.) Astronomy festival activities are, of course, in process of planning currently as well as an actual in-person Grand Canyon Star Party!!

The TAAA Board this month conducted regular business with the exception of two items. One, the Board approved the new road/possible loop access at the perimeter of CAC to be named the Kalas Road/Loop. The second new item was that Matt Penn, a TAAA member, this month shared with the TAAA Board some perspectives on NSF funding for projects such as the enormous solar eclipse project he previously ran. (A copy of the publication for the extensive

by Mae Smith

solar eclipse project is available at <u>https://</u> iopscience.iop.org/article/10.1088/1538-3873/ ab558c.) Apparently, Matt has future projects in process that we can be equally amazed about and proud of. Matt has graced us by sharing his affiliation as a TAAA member when he continues to give professional presentations on his work. Our new TAAA Board candidates are anxious to complete the election process in May and get started, so we are looking forward to a great year ahead.

I am again adding my caution here that as we proceed (hopefully at some point, past constant consideration of COVID), things won't be exactly the same as before COVID. Life has changed and evolved. TAAA has grown by over 200 members during COVID. We have learned a lot since March of 2020, and hopefully, with the positive growing and developing that has occurred in the last two years, we will be able to keep and to integrate into a TAAA that also encompasses and retains the positive aspects of our history. The TAAA that we all loved and the TAAA family we enjoyed before COVID is still here, but it is enriched and still developing. The next year is a year of possibilities for still greater enrichment in our TAAA family and its capabilities to serve. In our process of moving forward, we all should reflect upon the thousands and thousands of hours that our TAAA volunteers continue to give, and give with a smile. It is a marvel to behold. We are very, very rich, indeed!!

TAAA Desert Skies Bulletin <u>David Rossetter</u> – Editor Terri Lappin & Jim Knoll - Proofreading Greg Ruppel -Images; Ken Bertschy - Graphics

Committee Reports

Nominations and Volunteer Resource Committee

by David Rossetter TAAA Election 2022

The TAAA Leadership Election closes on May 6, 2022, at the monthly Membership Meeting. The NVRC will present their slate of nominees at the April 1st Membership Meeting. Keep in mind, if you are really interested in running for a leadership position on the Board of Directors or the Nominations and Volunteer Resource Committee, you need to let the NVRC know right away! However, if you miss the deadline of the end of March, you can still nominate yourself (or nominate someone else with their permission) as a "write-in" candidate up to one week before the election. The nominee's name will be put on the ballot.

Timeline

- March Final Candidate Interviews and Selection.
- April 1 Announce nominees before (via email) and introduce at Membership Meeting
- After April Meeting up to One Week Prior to May Meeting Write-In Candidates
- One Week Prior to May Membership Meeting up to 7:00 of meeting Vote!
- Announce Vote Results during Members-only portion of May meeting

Voting Procedures This Year

- We will be using a Voting Service named OpaVote for this election
- Voting will be all electronic over the Internet
- An email will be sent to all eligible members with a link to vote on 4-30-2022
- Voting will be open from 4-30-2022 until 7:00 PM at the May 6, 2022 General Membership Meeting

Constitution and Bylaws Changes Vote

At the March 2022 General Membership Meeting the NVRC ran the Constitution and Bylaws changes election. The results are as follows:

1. I approve the Constitution and Bylaws change (presented through the 01/24/22, all-member email and the 02/04/22, General Meeting) which changes all Board of Directors term lengths from one year to two years and defines a staggered election cycle.

```
      Total Votes:
      57

      Yes:
      55 (96%)

      No:
      2 (4%)

      Passed
```

2. I approve the Constitution and Bylaws change (presented through the 01/24/22, all-member email and the 02/04/22, General Meeting) which prohibits family members (as defined) from running for or serving on the Board of Directors at the same time.

 Total Votes:
 57

 Yes:
 52 (91%)

 No:
 5 (9%)

 Passed

As always, please contact the <u>NVRC</u> if you have any questions. <u>David Rossetter</u> - Chair, John Christensen, Allen Force

April 2022

by Jim Knoll

Thank you for volunteering your time and talents for our extremely important outreach mission. Below is the list for April, 2022. It is very busy as many schools wrap up the school year with science events, so I appreciate all the help you can provide. If you are new to Star Party outreach, let me know and we'll be sure to help you get started. It is important you sign up for star parties if you plan to attend, whether you bring a scope or help in other ways, so I can manage who from TAAA will be on-site and for you to be included in any reminder or weather emails.

The public Astronomy Events are also listed on the TAAA (<u>tucsonastronomy.org</u>) and Night Sky Network (NSN) (<u>nightsky.jpl.nasa.gov</u>) calendars. Also, all PUBLIC star parties will be listed on the TAAA Facebook events page and will be updated based on weather, etc. in real-time. You can follow any of those events and get a notification when I update the event. Again, this is only for PUBLIC star parties listed on Facebook. Contact Jim Knoll

Friday April 1 — Ash Creek, AZ (Near CAC) Ash Creek/Sunizona Library 6460 E Hwy 181, Pearce, AZ Age/Grade Level: All Ages; # Participants: 25 1 Additional Scope Needed (Jim Knoll, Tom Sarko scheduled) Setup Time: 7 pm. Start: 7:30 pm. End: 9 pm. Directions: I-10 or Dragoon Road to Hwy 191. South to Hwy 181. East on 181 to the school. Viewing Location: Outside the Library.

Saturday April 2 -- FAR EAST AZ (Chiricahua Mountains)

Chiricahua National Monument

12856 E Rhyolite Creek Rd, Willcox, AZ 85643 Age/Grade Level: All Ages; # Participants: 50 **1 Additional Scope Needed** (Jim Knoll, Tom Sarko, Bernie Stinger scheduled)

Setup Time: 6:15 pm. Start: 7 pm. End: 9 pm. Directions: Total distance is 100 miles from I-10 Houghton Exit. Take I-10 East to Exit 336 (Willcox). East on AZ 186 (Maley St in Willcox). Go 40 miles to Monument. Turn on AZ 181 for 4 miles to Entrance. Viewing Location: Far Away Ranch (about 12 mile inside entrance)

Thursday April 7 -- NW TUCSON (Tentative) St. Elizabeth Ann Seton School

8650 N Shannon Rd, 85742

Age/Grade Level: Grades K - 8; # Participants: 75 **3 Scopes Needed**

Setup Time: 6:30 pm. Start: 7 pm. End: 9 pm. Directions: Ina & Thornydale. North on Thornydale to Magee. Right (east) on Magee. Continue north on N Shannon Rd. School is next to Tucson National. Viewing Location: School Field.

Friday April 8 -- FAR SOUTH (GREEN VALLEY) Canoa Ranch 5375 S I-19 Frontage Road

Age/Grade Level: All Ages; # Participants: 50 **1 Scope Needed** (Bernie Stinger, John Dwyer, John McGee scheduled) Setup Time: 6:30 pm. Start: 7:30 pm. End: 9:30 pm. Nearest Moon Phase: First Quarter Directions: I-19 South to Exit 56. Cross under the

interstate and take the frontage road north to the park entrance.

Viewing Location: Open area center of complex.

Saturday April 9 -- CENTRAL TUCSON Astronomy Festival @ Brandi Fenton Park LOTS OF VOLUNTEERS REQUESTED!! (With or

without telescopes to help) 3482 E River Road (River & Alvernon) Age/Grade Level: All Ages Scopes Needed: As many as possible for Solar and Night Observing Night Sky Network Toolkits. As many as possible for interactive projects with the public. Extra volunteers to help anyone bringing a personal telescope to learn how to use it. NSN Toolkits & Solar: Setup Time: 2 pm. Exhibits & Observing: 3 pm - Sunset. Evening Observing: Setup Time: 6:30 pm. Observing: 7 - 9 pm Helping with personal telescopes 3 - 9 pm. Advise what time slot & activity you can support. Nearest Moon Phase: First Quarter. Directions: Enter Park from intersection of River and Alvernon. Viewing Location: Open Grass Field near main Ramada. Interactive exhibits at the Ramada.

Wednesday April 13 WEST TUCSON
Cooper Center for Environmental Learning
5403 W Trails End Rd, 85745
Age/Grade Level: Grade 2; # Participants: 25
2 Scopes Needed
Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm.
Nearest Moon Phase: First Quarter
Directions: West on Grant Rd, becomes Silverbell,
becomes Ironwood Hills Drive which dead-ends at
Camino De Oeste. Turn south. ALTERNATE: West
on Speedway west of I-10. North on Camino De
Oeste. Both paths: Turn west on Trails End Road
and follow signs to "Cooper Center".
Viewing Location: Open area near restroom facilities.
Access the site from the dirt road at the east end of the
main parking lot (near the dumpsters).
Thursday Angil 14 CENTRAL TUCCON

Thursday, April 14 -- CENTRAL TUCSON

(reschedule from March)

Alice Vail Middle School

5350 E 16th St.

Age/Grade Level: Grades 6 - 8; # Participants: 200 3 Scopes Needed

Setup Time: 6:30 pm. Start Time: 7 pm. End Time: 8:30 pm.

Nearest Moon Phase: Full

Directions: From Craycroft and Broadway, south on Broadway until 16th St. Right on 16th and the school is on the left.

Viewing Location: School yard south of buildings adjacent to cafeteria.

Saturday April 16 -- NORTHEAST TUCSON

Cub Scout Pack 107 @ Canyon View Elemen School 5725 N Sabino Canyon Rd

Age/Grade Level: Grades K - 5; # Participants: 25 1-2 Scopes Needed

Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm. Nearest Moon Phase: Full

Directions: Sunrise & Sabino Canyon. North on Sabino Canyon to the school on the left. Take first left and follow road until you go past the school buildings. At the sign that says "not a student drop off", turn right into the parking lot. The gate to the school grounds will be there.

Viewing Location: Playing fields at Canyon View Elementary.

Tuesday April 19 -- WEST TUCSON Cooper Center for Environmental Learning 5403 W Trails End Rd, 85745 Age/Grade Level: Grade 5; # Participants: 25 2 Scopes Needed Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm. Nearest Moon Phase: Third Quarter Directions: West on Grant Rd, becomes Silverbell, becomes Ironwood Hills Drive which dead-ends at Camino De Oeste. Turn south. ALTERNATE: West on Speedway west of I-10. North on Camino De Oeste. Both paths: Turn west on Trails End Road and follow signs to "Cooper Center". Viewing Location: Open area near restroom facilities. Access the site from the dirt road at the east end of the main parking lot (near the dumpsters).

Thursday April 21 -- St. David AZ (approx 35 miles SE of Tucson)

St David Elementary

70 E Patton St, St. David, AZ

Age/Grade Level: Grades K - 5; # Participants: 125 2 Scopes Needed

Setup Time: 7 pm. Start: 7:30 pm. End: 9 pm. Nearest Moon Phase: Third Quarter

Directions: I-10 Exit 303 Benson. South on Business 10/4th St. Continue south on Hwy 80 to St David. Hwy 80 becomes E Patton St. Continue to the school at 70 E Patton.

Viewing Location: Football field north of school buildings

Thursday April 21 -- WEST TUCSON

Cooper Center for Environmental Learning 5403 W Trails End Rd, 85745

Age/Grade Level: Grade 5; # Participants: 25 2 Scopes Needed

Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm. Nearest Moon Phase: Third Quarter Directions: West on Grant Rd, becomes Silverbell, becomes Ironwood Hills Drive which dead-ends at Camino De Oeste. Turn south. ALTERNATE: West on Speedway west of I-10. North on Camino De Oeste. Both paths: Turn west on Trails End Road

and follow signs to "Cooper Center".

Viewing Location: Open area near restroom facilities. Access the site from the dirt road at the east end of the main parking lot (near the dumpsters).

Friday April 22 -- ONLINE Virtual Star Party

Online streamed to either Facebook or YouTube Age/Grade Level: All Ages; # Participants: 150 (FILLED) 0 Scopes Needed (Jim Knoll, Jim O'Connor, Bernie Stinger, Rick Paul scheduled) Setup Time: 7:30 pm. Start: 8 pm. End: 10pm.

Saturday April 23 -- NORTH WEST TUCSON Marana Parks & Recreation

13250 N Lon Adams Rd, Marana (Ora Mae Harn Park), 85653

Age/Grade Level: All Ages; # Participants: 200 3 Scopes Needed

Setup Time: 6 pm. Start: 7 pm. End: 9 pm. Directions: From Tucson, take I-10 to exit 236. Take Sandario Rd (west side of I-10) heading south. Turn left (east) on Grier Rd. Turn right (south) on Lon Adams Rd and continue straight. The Park entrance will be on the left just past Chief Gaudette Dr (if you reach Barnett Rd, you have gone too far). Viewing Location: Ora Mae Harn Park (near Playground)

Saturday April 23 — ORACLE Oracle State Park

3820 E Wildlife Dr, Oracle, 85623 Age/Grade Level: All Ages; # Participants: 100 **3 Scopes Required** (Bernie Stinger scheduled) Setup Time: 6 pm. Start: 7 pm. End: 9:00 pm. Nearest Moon Phase: Third Quarter. Directions: Highway 77 (Oracle Road) north from Tucson. Follow signs to Oracle State Park Viewing Location: Sidewalk along the Kannally Ranch House parking lot and on the Ranch House upper patio. Some manual movement of equipment may be required due to exact observing location.

Saturday April 23 -- CAC

Evening Under the Stars -- Chiricahua Astronomy Complex (CAC)

9313 E Perseus Way, Pearce, AZ 85625 Age/Grade Level: All Ages; # Participants: 75 **4 Scopes Needed**

Setup Time: 6:30 pm. Start: 7:30 pm. End: 9:30 pm. Nearest Moon Phase: Third Quarter

Directions: I-10 east to exit 318 (Dragoon Road). Go 13.5 miles to Route 191. South on Rt 191 17.9 miles to Route 181. East on Rt 181 10.9 miles to S Price Ranch Road (dirt road just BEFORE you reach mile post 49 - cluster of mailboxes). Turn right (south) 1/2 mile to E Perseus Way. Turn left (east) 1/4 mile to entrance to CAC on the right.

Viewing Location: Chiricahua Astronomy Complex

Tuesday April 26 -- WEST TUCSON

Cooper Center for Environmental Learning 5403 W Trails End Rd, 85745 Age/Grade Level: Grade 5; # Participants: 25

2 Scopes Needed

Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm. Nearest Moon Phase: Third Quarter Directions: West on Grant Rd, becomes Silverbell, becomes Ironwood Hills Drive which dead-ends at Camino De Oeste. Turn south. ALTERNATE: West on Speedway west of I-10. North on Camino De Oeste. Both paths: Turn west on Trails End Road and follow signs to "Cooper Center". Viewing Location: Open area near restroom facilities. Access the site from the dirt road at the east end of the main parking lot (near the dumpsters).

Thursday April 28 -- NW TUCSON (Marana) Butterfield Elementary School

3400 W Massingale Rd.
Age/Grade Level: K - 6; # Participants: 80
3 Scopes Needed (TENTATIVE)
1 NSN Toolkit Requested
Setup Time: 5:30 pm. Start: 6 pm. End: 7:30 pm.
Directions: Ina/N Thornydale, east on Ina to N
Mededith Blvd. North to W Massingale Rd. West
(Left) to the school on the right side at corner of W
Massingale Rd and Eunice St.
Viewing Location: Lower playground on the paved area next to the building.

Thursday April 28 — AJO Ajo Library

15 W Plaza # 179, Ajo, AZ

Age/Grade Level: All Ages; **# Participants: 50** 1 additional telescope needed (Jim Knoll scheduled) Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm. Directions: State Road 86 (Ajo Hwy) west to Why AZ. North on SR 85 to Ajo. Once in Ajo, from Taladro St, turn right on Plaza to the Library.

Viewing Location: Outside Library.

School/Public Star Parties Continued		
Friday April 29 WEST TUCSON	Directions: Dragoon Rd east to US-191. South on	
Cooper Center for Environmental Learning	US-191 to Elfrida.	
5403 W Trails End Rd, 85745	Viewing Location: Outside Library.	
Age/Grade Level: Adults (Teacher workshop on		
Moon Journals during day, stargazing in the evening)	Saturday April30 — (NW Tucson)	
# Participants: 25; 2 Scopes Needed	NW YMCA (Solar/Toolkit)	
Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm.	7770 N Shannon Rd	
Directions: See previous Cooper Center entries.	Age/Grade Level: All Ages; # Participants:TBD	
	0 additional Solar Scopes (filled) / additional help	
Saturday April 30 — Elfrida (Cochise County near	with solar activity (Jim O'Connor, Tom Sarko, Terri	
CAC) Elfrida/Sunsites Library	Lappin scheduled)	
10552 US-191, Elfrida	Setup Time: 9 am. Start: 10 am. End: 1 pm.	
Age/Grade Level: All Ages; # Participants: 75	Directions: La Cholla/McGee. West on McGee to the	
1 telescope needed (Jim Knoll and Tom Sarko sched)	YMCA	
Setup Time: 6:45 pm. Start: 7:30 pm. End: 9 pm.	Viewing Location: TBD.	

Connecting Astronomy with the Public – April 2022 By Jim Knoll

March was another busy month for our community outreach with 14 School/Public & 15 Tucson Stargazing Adventures (TSA) paid events scheduled. Of those we cancelled 4 School/Public and 1 TSA event for weather so far. Our volunteers once again stepped forward with their time, talent, and equipment. For both programs, we deployed 56 telescopes for 82 hours with 24 different volunteers providing a total of 241 volunteer hours providing astronomy education to just over 2,600 excited participants. This assumes we get in all the events toward the end of the month. Public events included Canoa Ranch, Tucson Festival of Books (solar), Agua Caliente Park, and Ironwood Picnic. We also supported three schools and several other organizations. On the Tucson Stargazing Adventures program, we supported eight resorts and six personal or other organizations.



TIMPA Private Stargazing Event (Jim & Susan Knoll)

As you probably saw from my April volunteer request, we have another busy month ahead. Typically March and April are the busiest with schools trying to wrap up their science activities before the end of the school year. We have a total of 23 School, public or non-profit events and 6 TSA events. This includes our annual Astronomy Festival April 9th from 3 – 9 pm at Brandi Fenton Memorial Park. This is our signature event and can use all the help we can get from TAAA members. We will need solar & evening telescopes, volunteers for our astronomy activities, and extra volunteers able to float to discuss astronomy with the attending public or help them with any personal telescope use. Please let Terri Lappin or Jim Knoll know if you can help out with the Festival.

A huge thank you to all the TAAA members that helped with the star party program. We will likely be winding down soon for the Monsoon break and will gear back up in the Fall. I will present a short star party summary and recognize all the volunteers at the May TAAA meeting.

Special Interests Groups



Starry Messengers Special Interest Group Opening Minds to the Universe

We are ready for the Tucson Astronomy Festival! Read about the event elsewhere in this publication. We hope you'll be part of the event. This is our chance to really go all out to spread the joy of astronomy to the people of Tucson! Solar and night observing as well as hands-on activities will be featured.

Last month the TAAA participated in the Tucson Festival of Books Science City. Thanks to Ed Foley, Pete Hermes, Ardis Herrold, Irene Kitzman, Terri Lappin, Kay Lehman, Jim O'Connor, Tom Sarko, Bernie Stinger, Vance Tanner, Vanessa Thomas, Chris Welborn, Karen Liptak, Brian O'Connell, and Barbara Whitehead for giving the priceless treasures of time and talent. Some of these volunteers were there all day long, and some were there both days. Thank you so much for supporting this event.

A fun time was had by many people at our exhibit. Our exhibit included solar observing, Martian rovers, the search for life on Mars and beyond, creating extraterrestrials, a board for writing messages to an extraterrestrial, info about the search for earthlike planets, and the chance for life on those planets. In all, we made 3055 contacts and encouraged several people to join the TAAA. This is about average for past book festival events, which was nice given that we're coming out of the pandemic (or we hope we are). The next Starry Messengers meeting will be on April 11th at 7pm. We will be meeting by Zoom. If you want the Zoom link, contact <u>Terri Lappin</u>.

SMSIG on the Web



Contact <u>Conner Justice</u> for Zoom link and more information.

AFSIG on the Web

Access videos of previous meetings through the Members Only section of the TAAA web site.

Tucson Astronomy Festival

Saturday, April 9th

Brandi Fenton Memorial Park (River & Alvernon) Ramada 1 Set up: 1:30pm Public hours: 3pm to 9pm

Our showcase outreach event takes place this month which coincides with Global Astronomy Month. The Tucson Astronomy Festival will be held at Brandi Fenton Memorial Park from 3pm to 9pm. We'd like as many TAAA members involved as possible. This will be a mix of observing and educational activities for the public.

How you can help:

Observing: solar (3pm to 6:30pm) and/or night time (7:30pm to 9pm) Exhibit: set up starting at 1:30pm Hands-on activities: interact with the public (3pm to 6:30pm or any part of that time) Telescope Help: help the public with their scopes (3pm to 9pm) Loan a table or two: needs to be at the park by 1:30pm

Setup of the hands-on activities starts at 1:30pm under Ramada 1. Solar scopes will be setting up on the grassy area adjacent to the ramada. We need to borrow a few more tables for this event – contact Terri Lappin if you have one or two that we could borrow. They would be needed at 1:30pm.



Our activities switch at 6:30pm when we end the daytime activities and prepare for night observing. Night observing will officially begin at 7:30pm and end at 9pm. We need to vacate the park by 10pm.

Between daytime and evening activities we'll be giving away door prizes. These are intended for the public, not TAAA members, so please refrain from partaking in the booty. One young person will win a tabletop telescope!

We need help with the hands-on activities from 3pm to 6:30pm. Maybe you'll be setting your scope up in the evening but could arrive at 3pm to help us out. This year's activities include the search for life on Mars and beyond, remote controlled rovers, sunspots and space weather, light pollution, meteorites, and solar system models. While training is helpful, you'll be working with another volunteer who knows these projects. This is a good introduction to the outreach activities the Starry Messengers do all year long.

Throughout the event, we're offering to help the public with their own telescopes. We are looking for volunteers for this, so let either Terri Lappin or Jim Knoll know that you're available. We never know what scopes might be brought to the park but it's always satisfying helping someone learn how to use a scope.

by Susan O'Conner

TAAA Ladies Night Out

Ladies' Night Out is a social interest group for women members of the club. The group meets once a month at a local restaurant for fellowship and conversation. If you are interested in Ladies' Night Out, please contact <u>Susan OConnor</u>

> Thursday, Apríl 21 6:30pm

Pastiche 3025 N Campbell Ave

(W side of Campbell between E Hedrick and E Blacklidge)

Preview the menu at http://www.pasticheme.com

RSVP Susan

Astro-Imaging SIG

by Gregg Ruppel

The next AISIG meeting is Monday, April 18 @ 7:00 pm via ZOOM. AISIG meetings going forward will be on the 3rd Monday of each month. Email <u>Gregg Ruppel</u> for the ZOOM link or find it in the <u>TAAA Forum</u>.

Check out <u>AISIG On the Web</u> or contact <u>Gregg Ruppel</u> for the latest information and Zoom links. Gregg and the AISIG folks are very active on the <u>TAAA groups.io</u> forum. Check out all the helpful advice and amazing images there. For more information or instructions on how to join the forum, check out the <u>TAAA Forum</u>.

Imagers, to help ensure that the TAAA Desert Skies Bulletin has explicit permission to publish your fine work, we need you to submit your images directly to <u>Gregg Ruppel</u>, our Image Editor and Astro-Imaging SIG guru. Or come up with alternative arrangements with Gregg. To keep the bulletin at a reasonable size, we would like you to restrict the size of your images to around 10MB (a little over is okay if needed). That way, I do not have to mess with your files. If you desire, please include a link to the full-size version so our members can see your work in all its glory. Finally, if you do submit an image (or more), I will include you in a pre-publication version of the bulletin for your approval of the quality and layout. Feel free to ask me (<u>David Rossetter</u> – Desert Skies Bulletin Editor) or <u>Gregg</u> if you have any questions.

March Highlights from the Astro-Imaging SIG

From: Casey Good Astrophotography Director Kitt Peak National Observatory www.good-astronomy.com

My recent images from Chile. They are from my friends cdk17 at el sauce observatory (Greg Turgeon), all processed in PixInsight using a workflow that I teach at Kitt peak. Tech details at the astrobin link, thanks!



Area around NGC 3324: https://astrob.in/06nvkl/0/

Waves of Carina: https://astrob.in/8vtapo/B/

NGC 1316: https://astrob.in/yx76x9/0/







Edward Beshore

Here is a submission with a portion of the Orion Molecular Cloud complex. Still showing some tilt in the system but pretty nonetheless. Taken from my Tucson backyard. 31 x 60 second exposures filter through a Williams Optics RedCat 51mm Petzval Refractor, QHYCCD QHY600 camera, no filter, Paramount MyT mount, guide telescope TeleVue Pronto with ZWO ASI290MM Mini using PHD2. Processed with Pixinsight.

Wanda Taylor

IC 443 Jellyfish Nebula From multiple nights.

72x 300s with calibration frames, Explore Scientific ED 127 with a 0.7x reducer, ZWO ASI 2600 MC pro, L-Extreme filter, Celestron AVX mount, ASIAIR Pro, PixInsight.





Wanda Taylor

IC 405 Flaming Star Nebula

44x 300s with calibration frames, Explore Scientific ED 127 with .07x reducer, ZWO ASI2600 MC pro, L-Extreme filter , Celestron AVX mount, ASIAIR Pro, PixInsight.



Tom Eby Witchhead Nebula

Rokinon 135mm f2 astrograph lens and Nikon D810a for this view of the Witch Head, mapping some of the regional nebulosity including DN CB28 near bottom.

192 x 1min @ f/2.2, iso1000, dk/bias subtracted, 2x drizzle. Same f/ratio as the RASA8. Unguided, no filters used.

IC 447 is the larger blue nebulosity connected by LDN 1606-7 to the smaller nebula IC 446. Trumpler 5 is the dense OC at lower right and the small cluster NGC 2259 is in upper right corner.

The mass of DN is BD201/Barnard 38 complex. RASA8 f/2, 3.73 hours, asi2600, AP900GTOCP4 guided 60mm.





Randy Smith

NGC2024, IC434, NGC1977 and M42

JPEG Wide field image, 78x300 Redcat 51, ZWO 2600 MC, L-Enhance filter



CAC & TIMPA are open at full capacity (all pads are open).

The COVID Rules are posted on the TAAA Website (<u>http://tucsonastronomy.org</u>) under the respective observing Site (TAAA Resources, Observing Sites) and contain additional information.

Remember, reservations are required! (See below)



TIMPA (Tucson International Modelplex Park Association), Dark Sky site west of the Tucson Mountains. <u>TIMPA on the Web</u>

TIMPA Star Party Dates this month: April 2 and 23 and 29

Location: The TIMPA observing site is located a few miles beyond the Desert Museum (3250 N. Reservation Road, Tucson, AZ 85743).

The TIMPA site is only partially improved. There are no inside buildings provided other than restrooms. TAAA does not provide seating (members are welcome to bring folding chairs). Please note that members visiting the TIMPA site may encounter things commonly found in partially improved desert areas such as desert creatures and/or their remnants (such as gopher holes or ant hills), uneven terrain, weeds and desert pollens. Members using the site are encouraged to bring red lights and to move cautiously taking appropriate safety measures. The site does not have potable water, so bring your own non-alcoholic drinks.

Please contact the TIMPA Director to make a reservation: Ralph Means

Chirichaua Astronomy Complex

by Jim Knoll

CAC Weekend Dates coming up (Friday/Saturday): *April 1 - 2 (New Moon March 31) April 29 – 30 (New Moon April 30; Member Star-B-Que April 30)*

Chiricahua Astronomy Complex (CAC) is the club's dark observing site, located in Cochise County approximately 100 miles southeast of the center of Tucson. If you would like to attend, you must make a reservation on the CAC Web page at <u>CAC Reservations</u>.

Unless you are qualified to open and close the site, dates will be limited to those around the New Moon and are listed on the CAC web page. Hosted personnel are generally on site a few days before and after these dates. All facilities are currently open, but the Board will review COVID status each month.

Messier Marathon. We will be doing one at CAC Saturday evening March 5th into Sunday morning March 6th. We will have a few volunteers to help you along if needed. This is a great opportunity to socialize while searching out marathon objects. We will also have the grills available for an impromptu Star-B-Que before observing Saturday, so bring something to grill or eat. Make a reservation per the above link.

CAC Director: Jim Knoll

CAC on the Web

Observing Sites Star Party Dates 2022

TIMPA

April 2 and 23 and 29 May 20 and 21. 27 and 28 June 24 and 25 July monsoon season no dates set. August monsoon season no dates set September 23 and 24 October 21 and 22 November 18 and 19 December 16 and 17.

CAC

April 1 – 2 (New Moon March 31) April 29 – 30 (New Moon April 30; Member Star-B-Que April 30) May 27 – 28 (New Moon May 30) June 24 – 25 (New Moon June 28) July 29 – 30 (New Moon July 28) August 26 – 27 (New Moon August 27) September 23 – 24 (New Moon September 25) October 21 – 22 (New Moon October 25) November 25 – 26 (New Moon November 23) December 22 – 23 (New Moon December 23)

CAC Learning Center Update - by Ed Foley



The Learning Center at CAC continues to make progress. Our two metal buildings which will house our sleeping rooms, restrooms and classroom were completed and passed their Cochise County structural inspections. Progress has also been made on the Stinger Telescope Pad. The first of three telescope piers has been cut to its proper height. The rails on which its observatory will run have been fastened to their concrete channels. The parts to this first observatory has been cut by Mike McDowell, transported to CAC, and the observatory has been substantially assembled on site. The enclosure should be finished by the end of the month. The mount for the 9.25 inch Celestron will be welded to the pier soon afterward.

We did have a significant setback in progress due to the Covid illness of our contractor. Following his recovery, he informed us his health has been compromised to the point that he cannot physically continue the project. This has forced us to begin the process of finding a new contractor who can finish the project. The interior framing, electrical, plumbing etc. is more routine than the prior phase of construction and we are hopeful the project interior build outs will proceed shortly.

by Doug Smith What's Up list for April 2022 – May 2022

Fellow amateur astronomers, many of the Astronomical League observing programs can be done from our backyards. The following is a list of the objects for various AL observing programs that are well placed for observation during April and May 2022.

Constellation Hunter Program – Northern Skies

The following Northern Constellations are well placed for viewing for April and May: Cancer, Canes Venatici, Coma Berenices, Leo, Leo Minor, Sextans, Ursa Major

Messier Observing Program

The following Messier objects are well placed for viewing during April and May (listed in ascending RA): M81, M82, M95, M96, M105, M108, M97, M65, M66, M109

Lunar and Binocular Observing Program

The following is a list of dates for the lunar phase when observations should be made during April and May:

New Moon: April 1, April 30, May 30 40 Hours waxing: April 3, May 2 72 hours waxing: April 4, May 4 4 days old: April 5, May 5 7 days old: April 9, May 8 10 days old: April 12, May 11 Full (14 days old): April 16, May 16 Gibbous: April 23, May 23 72 hours waning: April 27, May 27 40 hours waning: April 28, May 28

Solar System Observing Program

The following is a list of planets that can be observed during April and May:

Mercury is an early evening object for all of April and the first 3 weeks of May, reaching greatest elongation on April 28.

Venus is an early morning object during April and May.

Mars is an early morning object during April and May.

Jupiter is an early morning object during April and May.

Saturn is an morning object in April and becomes a late night object, rising around midnight, by late May. Uranus is setting earlier each night during April, going behind the Sun around April 2, becoming an early morning object during May.

Neptune is an early morning object in April and May.

During the first week of April Mars, Saturn and Venus are very close to each other in the early morning sky. During the last week of April Venus, Jupiter and Neptune are very close to each other.

Urban Observing Program

The following deep sky objects are well placed for observing during April and May: M81, M82, NGC 3242

The following Double Star is well placed for observation during April and May: Gamma Leo



Since September 1922, Steward Observatory has been hosting public evening lectures in astronomy. The lectures begin at 7:30 p.m. MST and will be held in Steward Observatory (933 N Cherry) Room N210 on the University of Arizona campus. The Raymond E. White, Jr. Telescope in the historic Steward Observatory Dome will be open for public viewing after the conclusion of the lecture, weather permitting!



All of the lectures and the use of the telescope are free of charge and open to the general public.

For more information, contact <u>Dr. Thomas Fleming</u> or at 621-5049.

Spring 2022 Lectures

For Spring 2022, if you attend the lecture in person, we ask that you wear a face mask while you are inside Room N210. Face masks will be available in the room should you need one. Should you not wish to attend in person, you can watch the lecture LIVE on ZOOM.

April 11 Mr. Ryan Endsley Steward Observatory April 25 Dr. Megan Mansfield NASA Sagan Fellow Steward Observatory Looking Forward to JWST: The First Galaxies

Searching for Atmospheres on Rocky Planets with JWST

Stream past lectures here.







BH PIRE Webinar Series: Spring 2022

The upcoming Black Hole PIRE series features the most advanced approaches to studying the astrophysics of the black hole in the center of the Milky Way. Four renowned astrophysicists will share their research around understanding the unique environment around Sagittarius A*.

All are welcome to join these remote talks. Each session will last one hour including Q&A and are designed as stand-alone topics. Please plan to join for any or all sessions and share this series with your colleagues.

Registration now open for initial webinar sessions. See links below.

March 29, 2022 1600 UTC	Our Galactic Center: A Unique Laboratory for the Physics & Astrophysics of Black Holes Andrea Ghez, UCLA 2020 Nobel Prize in Physics
April 2022	Horizon Scale Physics Around Sagittarius A* Feryal Ozel, UArizona

Skyward By David H. Levy April 2022

Omicron!



Over the last few months you must have read dozens of articles, online or in print, about the Omicron variant of COVID-19. Fortunately, this is not one of them. This article is about Omicron² Eridani. It is a faint star in the constellation of Eridanus, the River.

Actually, there are two Omicron stars in that constellation. The first is brighter, and is a variable star. The second one is one of the closest stars to the Sun. Omicron², also known as 40 Eridani, happens to be not a disease but one of the most interesting star systems in the entire sky.

Omicron² is a triple star system that is only about 16 light years away. Its brightest component is a Sun-like star faintly visible to the unaided eye on a good night. It lies in northern Eridanus, the River, just a few degrees west of Rigel at the foot of Orion. The secondary is a white dwarf star. Unlike the companion of Sirius, this star is 9th magnitude and not near the brighter star, so it is easy to see in a small telescope. The third star is not far from the

secondary, but at 11th magnitude it is also not difficult to spot. This third star is a red dwarf.

Although red dwarf stars are the most plentiful, by far, in our region of the Milky Way galaxy, they are almost impossible to see because they are so small. The closest one to us is Proxima Centauri, or Alpha Centauri C, which at 4.24 light years is the closest star to the Sun. Also, because they are so small and intrinsically faint, only a few of them are easy to find. 40 Eridani C is one of the easiest to find.

This interesting star has something else going for it. In 2018 astronomers discovered a planet orbiting the primary star. With a rapid orbit around Omicron², such a planet would receive much more radiation from the primary star than Earth gets from the Sun. But in 2021 new observations cast doubt on whether this planet exists at all.



Tim Hunter took this beautifully focused image of Omicron (2)Eridani. The primary star is bright; the secondary, a white dwarf, is much fainter; and the tertiary, a red dwarf, is fainter still.

Whether Omicron² Eridani really hosts a planet is subject to debate. But in the universe of Star Trek, it surely does. It is the home of Vulcan, Mr. Spock's home world. In the episode "Operation Annihilate", which appears near the end of the first season, Spock is blinded by the intense light used to immobilize the invading parasites on the planet Deneva. However, his blindness is temporary because of the existence of an inner eyelid. Vulcan is said to orbit Omicron² Eridani's primary star, and since it is so much brighter than our Sun, even though Vulcan is at the same distance that Earth is from our Sun, they need the inner eyelid to protect their eyes.

I rather enjoy the idea that the fictitious Vulcan happens to orbit one of my favorite real stars. And unlike the Omicron variant, which one hopes will be eradicated soon, we admire Omicron² Eridani, the real star, and wish it to "Live long and prosper."