The Bays Mountain Astronomy Club Newsletter

April 2024

Kingsport, TN

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Cosmic Reflections

Greg Penner - BMAC Interim Chair

reetings BMACer's! Spring is finally here, which brings us warmer nights that are more suitable for stargazing. Of course, this year it also brings us... Totality! April 8th is fast approaching, and the entire nation will once again be captivated by a Great American Eclipse. As you finalize whatever plans you have for viewing the eclipse, I hope you enjoy the article in this month's "Stellar Observations" in which I describe my experience viewing totality in 2017. We can all look forward to our June meeting in which we can share our eclipse experiences in a similar way by telling stories and sharing pictures. We have other things to look forward to coming up in May. At our regular club meeting on May 3rd, we will have our annual meeting dedicated to student presentations. This is one of our favorite events in which we highlight the scientific work being done by students in our communities. Giving these students an opportunity to present their work to us will help sharpen their abilities to communicate their research and results.

On May 11th, Natural Tunnel State Park will be hosting a star party and our club has been invited to attend. You are welcome to bring your own equipment. Viewing will take place at the gazebo starting at sunset.

Also coming up in May is Astronomy Day at Bays Mountain on May 18th. From 1p-4p, we will have tables set up at the Pavilion with various themed displays and activities. BMACers are welcome to help share astronomy info with the public. That night will be observing for the public from 8:30p-9:30p at the observatory (or planetarium if poor weather). [Ed.: In addition to our normal outreach of Astronomy Day, the Bays Mountain Park Association is also hosting a "Kids at Bays Day" on the 18th. They will start earlier in the day and be sprinkled about the Park grounds. This means that we may have a larger than normal turn out of families with young ones. So, if you'd like to be a part of this event, please consider running an activity that can be hands on or Make-N-Take. Having a range of level of activities for different age groups will be good. There will be tiny tots to teens. Please **contact me** with questions or

suggestions via work e-mail and I'll pass this along to Greg. Due to the three-hour window, we may want more than one person running any one activity to spread out the labor.]

As a reminder, we will NOT have our usual club meeting in April in order to give everyone a chance to travel to eclipse viewing locations. Our next meeting will be on May 3rd for the student presentations. I wish for everyone safe travels and clear skies for the eclipse viewing and look forward to seeing everyone in May!

BMAC Notes

BMAC Meeting - March 1, 2024

Our March meeting went very well. Greg Penner presented his “Walk through the Solar System” while he was in Switzerland some years ago. Very cool pictures!

Greg presenting in the planetarium. Image by Adam Thanz (Sorry for the banding. Now we have to worry about LED lighting and it’s non-standardized refresh rate with photography.)

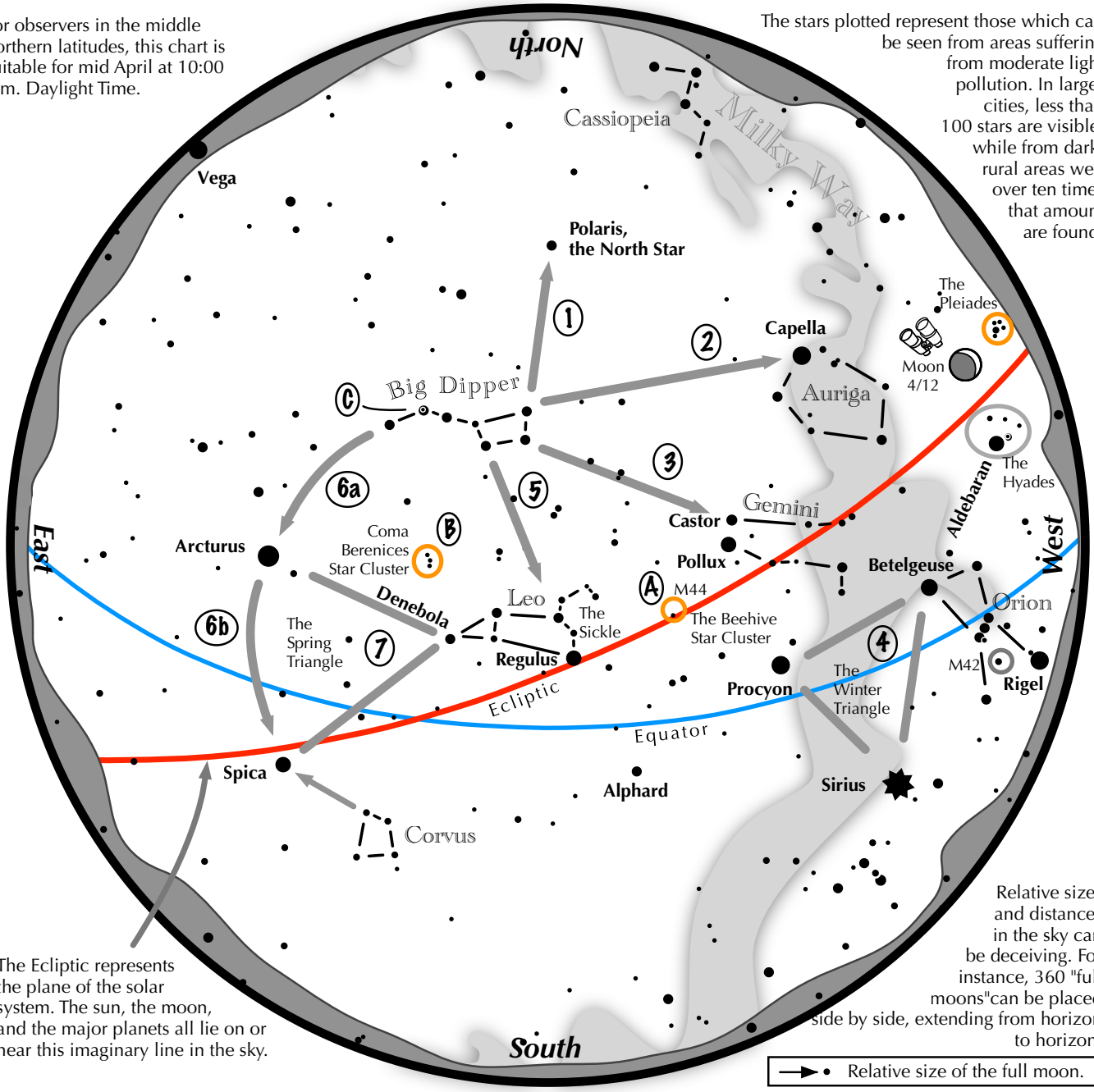
Sky News from the Astronomical League

he Astronomical League has a plethora of educational content to help you learn and enjoy the night sky more. The following inserts are just a tiny bit of what they provide.

Navigating the April Night Sky, Northern Hemisphere

For observers in the middle northern latitudes, this chart is suitable for mid April at 10:00 p.m. Daylight Time.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons"can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the April night sky: Simply start with what you know or with what you can easily find.

1. Extend an imaginary line north from the two stars at the tip of the Big Dipper's bowl. It passes Polaris, the North Star.
2. Draw another imaginary line west across the top two stars of the Dipper's bowl. It strikes Capella low in the northwest.
3. Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
4. Look in the west-southwest for the bright Winter Triangle stars of Sirius, Procyon, and Betelgeuse.
5. Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
6. Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica.
7. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.

Binocular Highlights

A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.
B: Look nearly overhead for the loose star cluster of Coma Berenices.
C: In the Big Dipper's handle shines Mizar next to a dimmer star, Alcor.

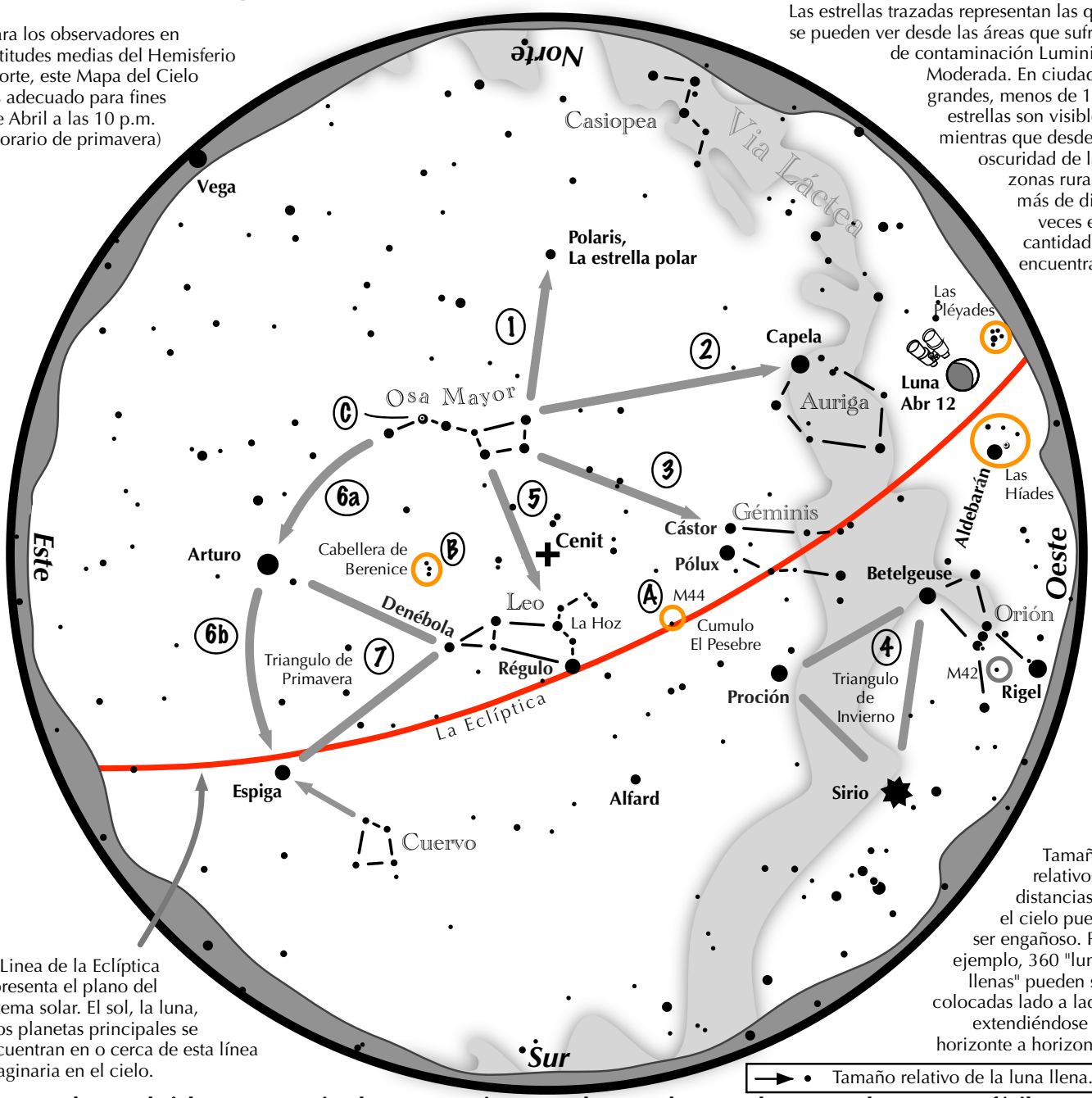
Astronomical League
www.astroleague.org

Duplication allowed and encouraged for all free distribution.

Navegando por el cielo nocturno de Abril

Para los observadores en latitudes medias del Hemisferio Norte, este Mapa del Cielo es adecuado para fines de Abril a las 10 p.m. (horario de primavera)

Las estrellas trazadas representan las que se pueden ver desde las áreas que sufren de contaminación Luminica Moderada. En ciudades grandes, menos de 100 estrellas son visibles, mientras que desde la oscuridad de las zonas rurales más de diez veces esa cantidad se encuentran.



La Linea de la Eclíptica representa el plano del sistema solar. El sol, la luna, y los planetas principales se encuentran en o cerca de esta línea imaginaria en el cielo.

Tamaños relativos y distanciasen el cielo puede ser engañoso. Por ejemplo, 360 "lunas llenas" pueden ser colocadas lado a lado, extendiéndose de horizonte a horizonte.

Tamaño relativo de la luna llena.

Navegando por el cielo nocturno: simplemente comience con lo que sabe o con lo que puede encontrar fácilmente.

1. Haz una línea hacia el norte desde las dos estrellas en la punta de la Osa Mayor. Pasa por Polaris, la estrella polar.
2. Haz una línea a través de las dos estrellas superiores de la punta del tazón de la Osa Mayor. Llegaras a Capela en el noroeste.
3. A través de las dos estrellas diagonales de la Osa Mayor, dibuja una línea que apunta a las estrellas gemelas de Cástor y Pólux en Géminis.
4. Busque en el oeste-suroeste las brillantes estrellas del Triángulo de Invierno de Sirio, Procíon y Betelgeuse.
5. Directamente debajo del tazón de la Osa Mayor se encuentra Leo con su estrella principal, Régulo.
6. Siga el arco del mango del tazón de la Osa Mayor. Primero cruza Arturo, luego continúa hacia Espiga, luego Cuervo.
7. Arturo, Espiga y Denébola forman el triángulo de primavera, un gran triángulo equilátero.

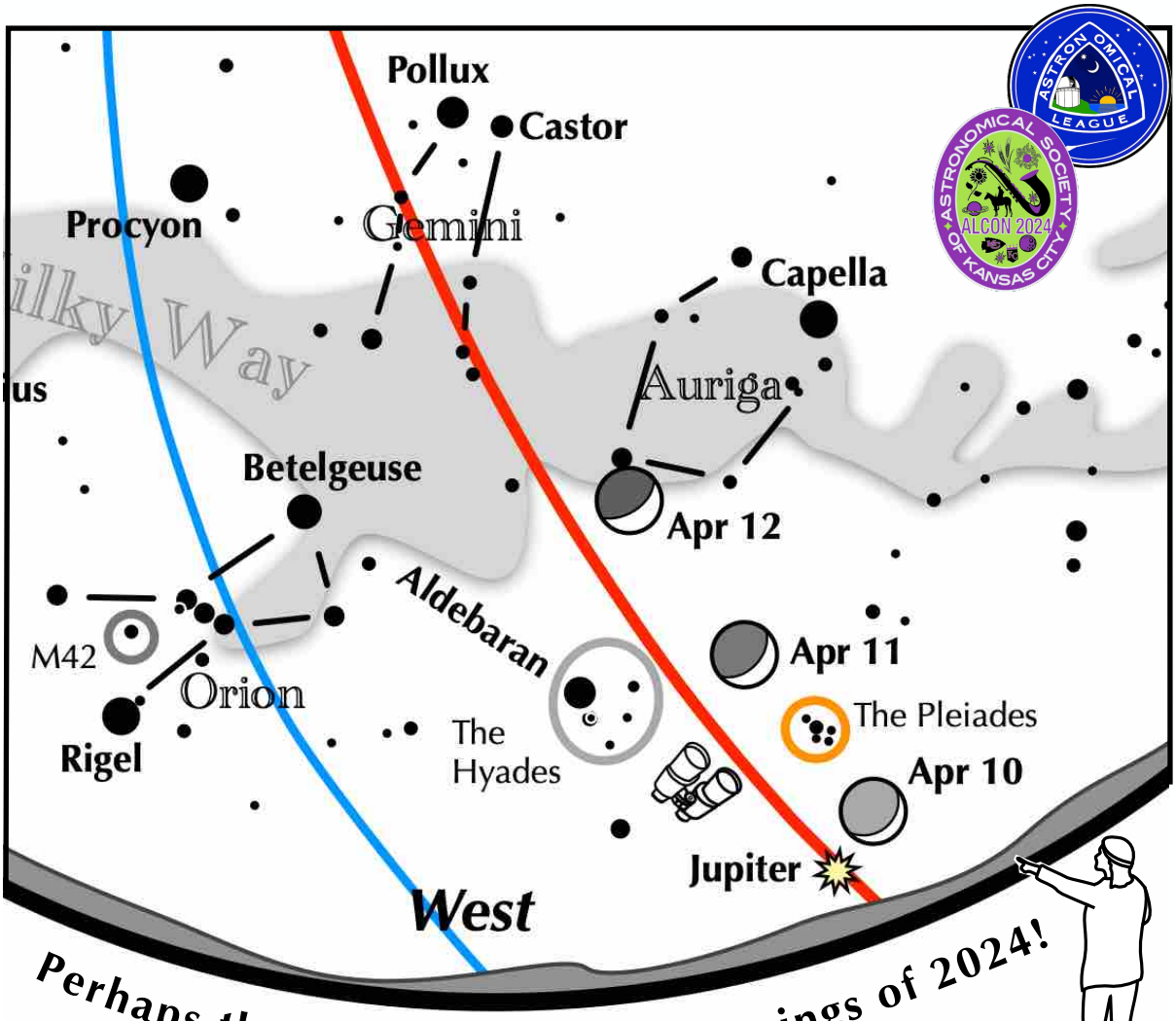
Puntos destacados con binoculares

A: M44 (Cumulo El Pesebre), un cúmulo de estrellas apenas perceptible a simple vista, se encuentra al sureste de Pólux. **B:** Mira alto en el este para ver el cúmulo de estrellas perdidas de Cabellera de Berenice. **C:** Mizar brilla junto a una estrella más tenue, Alcor.

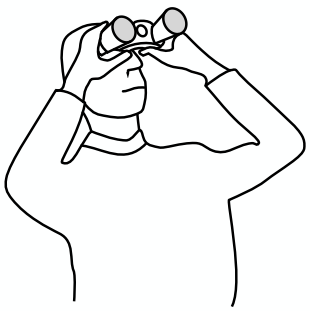
Liga Astronómica
www.astroleague.org

Traducción al español por Dr. Salvador Aguirre

If you can see only one celestial event this April, see this one.



Perhaps the most enchanting evenings of 2024!



Enhance the scene – use binoculars!

On April 10, 11, and 12, look low in the west-northwest 60 minutes after sunset.

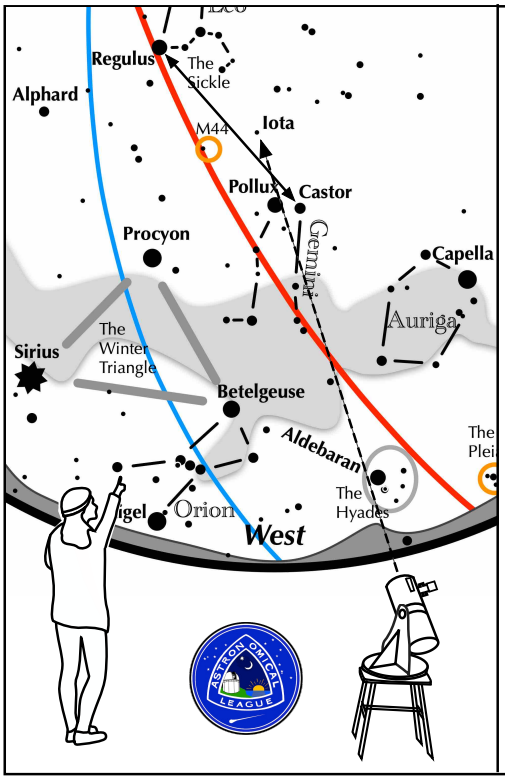
• The crescent moon, glowing full with earthshine, floats just above the horizon in the bright twilight on April 10. Next to it shines Jupiter, and above it lies the pretty Pleiades star cluster.

• On April 11, the slightly thicker, but more pronounced crescent moon moves between the Pleiades and the Hyades star clusters.

• On the third night, the crescent moon stands commandingly above the scene.

www.astroleague.org

ASTRONOMICAL LEAGUE Double Star Activity



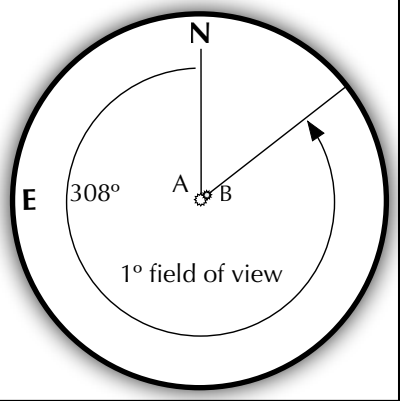
Other Suns: Iota Cancri

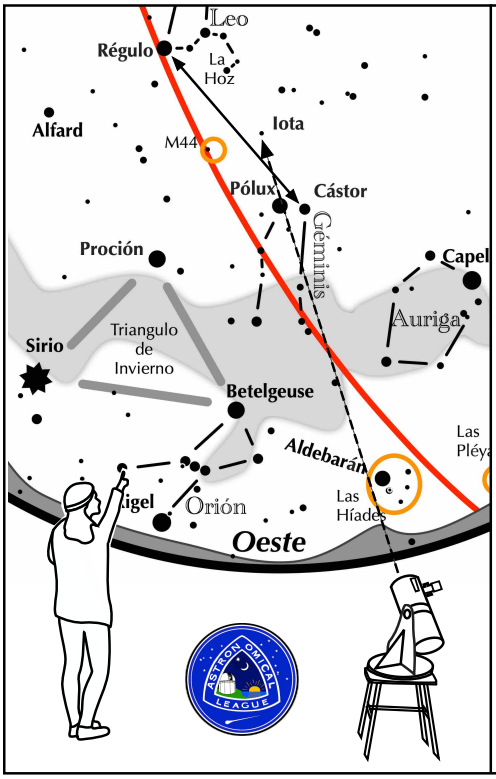
How to find Iota Cancri on an April evening

Face west. Look for the twin stars of Gemini, Castor and Pollux. Find Regulus. Iota lies about mid way between Castor and Regulus. It will be a moderately dim star.

Suggested magnification: >20x
Suggested aperture: >3 inches

Iota Cnc
A-B separation: 31 sec
A magnitude: 4.1
B magnitude: 6.0
Position Angle: 308º
Colors:
yellow
blue





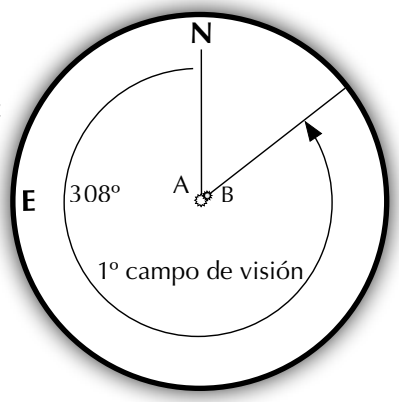
Otros Soles: Iota Cancri

Cómo encontrar a Iota Cancri en una tarde de Abril

Mire hacia el oeste. Busque las estrellas gemelas de Géminis, Castor y Pólux. Encuentra a Regulus. Iota se encuentra a medio camino entre Cástor y Régulo. Será una estrella moderadamente tenue.

Ampliación sugerida: >20x,
Apertura sugerida: >75 mm

Iota Cancri
A-B separación: 31 sec
A magnitud: 4.1
B magnitud: 6.0
PA: 308º
Colores:
amarilla
azul



To regsiter for ALCon, first click on the link, then choose "buy tickets."

https://www.tickettailor.com/events/astronomicalsocietyofkansascity/1187693#

It's ASKC's 100th anniversary! We are honored to be the official host for this year's Astronomical League Convention – ALCon 2024 – this July.

Held at the beautiful Overland Park DoubleTree Hotel

See you at ALCon!

Astronomical Society of Kansas City

Stellar Observations

Greg Penner

Ready for Totality!

April 2024 is finally here! Seven years ago, much of the nation was captivated by the first Great American Eclipse, and now we get to do it all over again. August 21, 2017 will always be a special day to me since it was the first (and as of this writing) only total solar eclipse I had ever seen. At that time I lived in Houston, Texas. Two friends and I got in a van loaded with snacks, drinks, camping gear, a telescope and a few cameras on August 20th and started driving north on Interstate 45. As we drove, we were consulting weather apps on our phones to determine where along the path of totality would have the best chance of clear skies. Our two options were "somewhere in Nebraska" or "somewhere in Illinois/Kentucky/Tennessee." We were really winging it, as we had no accommodations anywhere. Not too far out of Houston, we decided to head east. After 800 miles and 13 hours of driving, we were able to snag a campsite at a campground outside of Clarksville, Tennessee in the dark, wee hours of August 21st. After a quick setup of our tent, a few hours of

sleep and a hearty breakfast at the local Cracker Barrel we were ready to experience totality!

Greg and telescope w/ solar filter - all images by Greg

Observers in campground

Taking photos during totality

We were fortunate in our selection of Clarksville as we had some high wispy clouds early in the day, but eventually the skies cleared in time for totality in the afternoon. I set up my 90mm refractor with a solar filter firmly in place over the objective with my Nikon DSLR attached. Adjacent to the telescope, we positioned a "pop-up" shade canopy (August in Tennessee was mighty warm) so I could occasionally find refuge in the shade while the telescope was out in full Sunlight. As the partial eclipse phase began, people all over the campground settled in to their viewing locations and donned their eclipse glasses. I periodically snapped pictures as the Moon gradually crept across the face of the Sun. Since the Sun was nearing the minimum of its 11 year cycle of activity, there were minimal Sunspots to be seen. Periodically, the aforementioned high clouds would make appearances, but their frequency seemed to be lessening as the eclipse progressed.

As our campground environment was noticeably feeling more "shady" and half-lit, I saw through my camera/telescope the unusual sight of a black half circle turning the Sun into an ever

thinner orange crescent. As the Moon was getting closer and closer to the far edge of the Sun, the filtered orange image of the razor thin crescent was all that remained of the Sun. At that moment, just seconds before the onset of totality, I pulled off the filter from the front of my telescope to try to capture the "diamond ring" and "Baily's Beads" effects. (An important note here: if you're watching the eclipse with "eclipse glasses," you MUST keep them on until totality begins, then ABSOLUTELY take them off to enjoy the totality phase with your naked eyes!) With the naked eye, we could easily see Venus and Jupiter in the temporarily darkened sky and the shimmering solar corona. The Moon gave the impression of an inky black spherical hole in the sky. With only about 2 minutes to enjoy the show of totality, I alternated between just taking it in with my naked eyes, and continuing to snap pictures using various exposure settings. I was hoping to capture details such as coronal streamers or solar prominences.

I was thrilled with the images I was able to capture: diamond ring, Baily's Beads, coronal streamers, and big prominences just

before totality ended! The whole experience was unforgettable, but the totality phase itself goes by so fast. My immediate reaction was, "Please rewind so we can watch it again!" Inevitably, it leaves you wanting to see it all again, doing internet searches for the next total eclipse. That time is now upon us, and whatever epic traffic jams we will have to endure, it will be worth it to experience again. Speaking of traffic jams, that was the one part of our adventure that was a drag. On the way back to Houston that late afternoon, we got stuck behind an accident on the interstate in Arkansas. For 2 hours we sat motionless as people stood outside of their vehicles waiting for the mess to be cleared. At least we all had a nice topic for conversation, sharing our eclipse viewing stories. As our eclipse van was making its way back to Houston, Hurricane Harvey was just entering the Gulf of Mexico. Little did we know that we were 5 days away from seeing over 50" of rain fall on our neighborhoods, flooding over 200,000 homes in the Houston metro area in a matter of days and being a major catalyst in our decision to retire to East Tennessee the following year.

My hope is that the Great American Eclipse on April 8, 2024 will be the source of many great eclipse experiences for our club members. So please come to our June club meeting where we can all share stories and pictures and start making plans for the next occurrence of: TOTALITY!

Some high clouds intruding

Crescent Sun

"Diamond ring" effect

Solar Corona

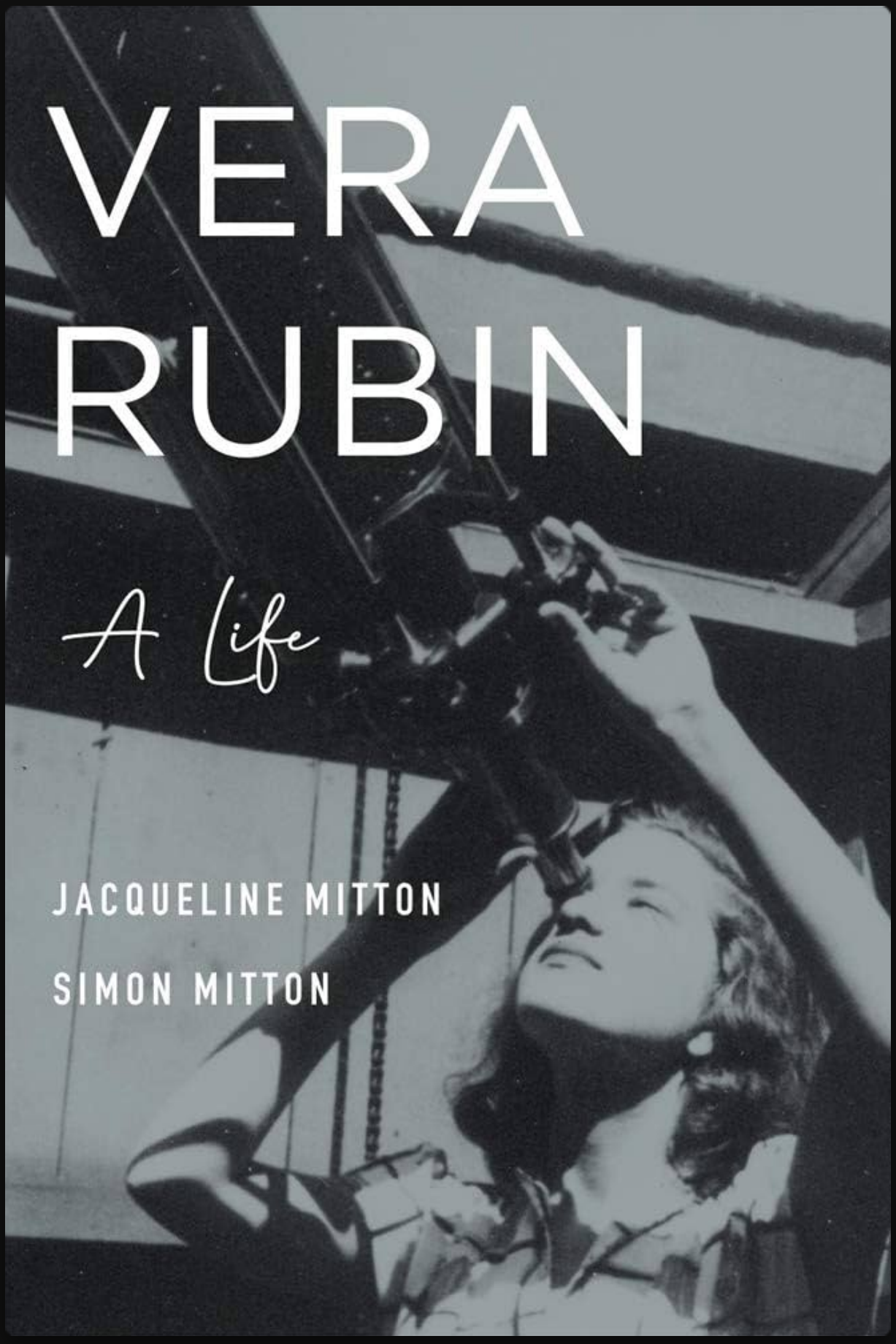
The Queen Speaks

Robin Byrne

Book Review: Vera Rubin A Life

era Rubin is one of my astronomy heroes, so finding a book about her work and life made me happy. Reading it made me even happier. Vera Rubin: A Life by Jacqueline Mitton and Simon Mitton was both an enjoyable read, as well as a wonderful exploration of Rubin's life and work.

Written in a mostly chronological order, we follow Vera Rubin from childhood to the end of her life. Along the way, we see her passion for astronomy grow and flourish. In an era when very few women pursued a career in the sciences, Vera followed her own path, despite the obstacles of sexism she met along the way. What we also see are all the people who would serve as mentors, helping her to become the successful astronomer we all know.



Book cover to Vera Rubin: A Life

One of the outstanding characteristics of Vera Rubin that we encounter is her innate drive to work. During times that she was between jobs or at home caring for her newborn children, Rubin was least satisfied. Thanks to the tremendous support of her husband and parents, Rubin was able to raise a family while, mostly, working full-time. Employers that let her work at home, were also a benefit. A common theme was her dining room table covered with research projects she was working on while at home.

Rubin was first and foremost, an observational astronomer. She was happiest when at an observatory, even those that had never before had a woman use their facility and lacked a women's restroom. Using the spectrometer developed by Kent Ford, Rubin meticulously measured the motions of stars in spiral galaxies at varying distances from the centers of the galaxies. Using the star motions, she was able to calculate the mass distribution in the galaxies. It was this project that led to the best evidence yet for the existence of dark matter, due to the calculated mass distributions showing much more mass in the

outer portions of the galaxies than the distribution of stars would imply. There was a lot of mass present that just couldn't be seen!

Vera Rubin measuring spectra in 1974 at the Department of Terrestrial Magnetism at the Carnegie Institution in Washington, D.C.
Image by ***NOIRLab/NSF/AURA***

Photograph of Vera Rubin at Kitt Peak National Observatory in 1963 operating the observatory's No.1. 36-inch telescope. Kent Ford's Image tube spectrograph is attached to the telescope. With Ford, she continued using the Kitt Peak 2.1-m, accumulating over 60 galaxy rotation curves over the following years. Flat rotation curves were directly visible from the spectra: these data provided compelling observational evidence for a new kind of matter in the Universe, "dark matter." Vera Rubin continued observing at Kitt Peak and Cerro Tololo throughout her long career.
Image by ***KPNO/NOIRLab/NSF/AURA***

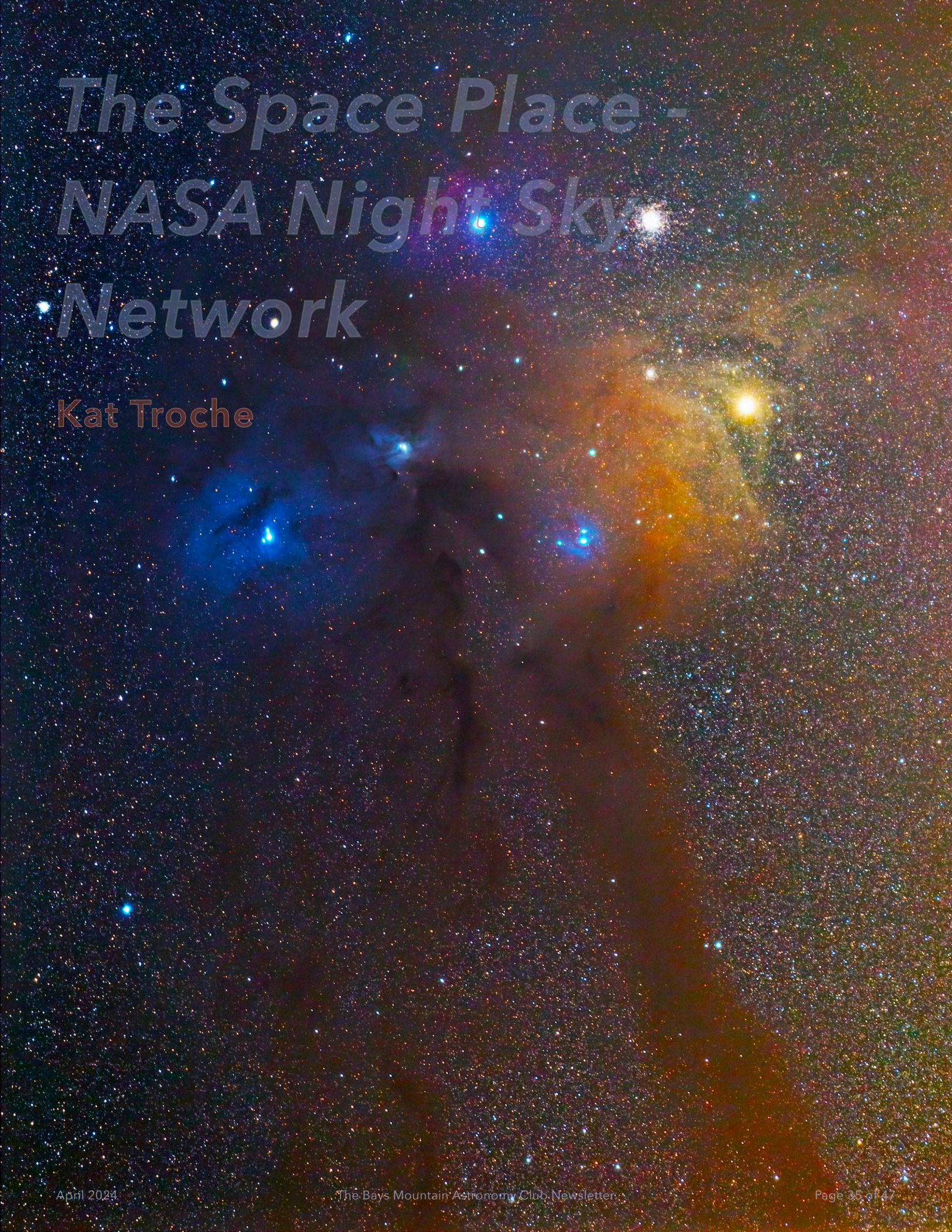
While the story of her research and discoveries is fascinating, more illuminating were the stories of her staunch views concerning the role of women in the astronomical community. Beyond being a trailblazer, Rubin was very vocal about the recognition and respect women in the field deserved. When awarded a prize from an organization that held their meetings at a men's-only club, Rubin declined, stating that she would only accept the award if they discontinued supporting a discriminatory venue. As she became more respected in the field, she used her status to push for more representation of women at professional conferences, pointing out the need for more women to be invited speakers. Many quotes are sprinkled throughout the book, but my favorite is a note she wrote to the National Academy of Sciences (NAS) president, Bruce Albert, after the NAS meeting in 1999: "WOW!!! What a record to carry into the year 2000!!! You've outdone yourselves. Last year I complained about one meeting that had only one woman speaker. This year you've proved that you can do worse. At least next year it should be hard to do worse than this. 21 speakers -

all male." This passionate advocacy was also found in Rubin's mentoring of young women in astronomy, including her own daughter. Many female astronomers owe their success, both personally and professionally, to the support they received from Rubin.

While reading about the declining years of anyone is sad and disheartening, the life of Vera Rubin was so full of light and joy, that the inevitable sad ending is softened by all that came before it. Vera Rubin lived life to the fullest, and her story is an inspiration, not just in terms of her astronomical work, but also as a lesson for how to make the most of your life, regardless of what your career may be. If you want to learn about an amazing woman, and be inspired along the way, I highly recommend Vera Rubin: A Life.

References:

Vera Rubin: A Life by Jacqueline Mitton and Simon Mitton; Belknap Press of Harvard University Press, 2021



The Space Place - NASA Night Sky Network

Kat Troche

Participate in Eclipse Science

April is NASA's Citizen Science Month, and there is no shortage of projects available. Here are some **citizen science projects** that you can participate in on April 8th, on and off the path of totality right from your smartphone!

Eclipse Soundscapes

Eclipse Soundscapes will compare data from a 1932 study on how eclipses affect wildlife – in this case, crickets. There are a number of ways you can participate, both on and off the path. NOTE: you must be 13 and older to submit data. Participants 18+ can apply to receive the free Data Collector kit. Learn more at: **eclipsesoundscapes.org**/

GLOBE Eclipse

Folks that participated in the GLOBE Eclipse 2017 will be glad to see that their eclipse data portal is now open! With the GLOBE Observer smartphone app, you can measure air temperature and clouds during the eclipse, contributing data to the GLOBE program from anywhere you are. Learn more at:

observer.globe.gov/do-globe-observer/eclipse

HamSCI

HamSCI stands for Ham Radio Science Citizen Investigation. HamSCI has been actively engaged in scientific data collection for both the October 14, 2023, annular solar eclipse and the upcoming April 8, 2024, total eclipse. Two major activities that HamSCI will be involved in around the solar events will be the Solar Eclipse QSO Party (SEQP) and the Gladstone Signal Spotting Challenge (GSSC) which are part of the HamSCI Festivals of Eclipse Ionospheric Science. Learn more about these experiments and others at: **www.hamsci.org/eclipse**

SunSketcher

If you're traveling to totality, help the SunSketcher team measure the oblateness, or shape, of the Sun during the eclipse by timing the flashes of Baily's Beads. You will need a smartphone with a working camera for this, along with something to hold the phone in place - don't forget a spare battery! NOTE: The app will need to run from five minutes before the eclipse starts until the end of the eclipse. Any additional phone use will result in Sun Sketcher data loss. Learn more at: **sunsketcher.org/**

Don’t stop at the eclipse - NASA has citizen science projects you can do all year long – from **cloud spotting on Mars** to **hunting for distant planets**! By contributing to these research efforts, you can help NASA make new discoveries and scientific breakthroughs, resulting in a better understanding of the world around us, from the critters on the ground, to the stars in our sky.

We'll be highlighting other citizen science projects with our mid-month article on the **Night Sky Network** page, but we want to wish all you eclipse chasers out there a very happy, and safe solar eclipse! For last minute activities, check out Night Sky Network's **Solar Eclipse Resources section**!

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit **nightsky** to find local clubs, events, and more!

BMAC Calendar & More

Calendar:

MAC Meetings:

- No April meeting due to eclipse.
- Friday, May 3, 2024 - 7p - Student presentations. Show & Tell will follow.
- Friday, June 7, 2024 - 7p - Eclipse stories.
- Friday, August 2, 2024 - 7p - Topic TBA.
- Friday, September 6, 2024 - 7p - Topic TBA.
- Friday, October 3, 2024 - 7p - Topic TBA.
- Friday, December 6, 2024 - 7p - Topic TBA.
- Friday, February 7, 2025 - 7p - Topic TBA.

SunWatch:

- Every clear Saturday & Sunday - 3p-3:30p - March-October - By the Dam
  - View the Sun safely with a white-light view if clear.; Free.
  - You must have completed the Park Volunteer Program in order to help with the public program. If you have, and have been trained, please show up at least 30 minutes prior to the official start time.

StarWatch:

- March 30, 2024 - 8p
- April 6, 13, 20 & 27, 2024 - 8:30p
  - View the night sky with large telescopes at the observatories. If poor weather, an alternate live tour of the night sky will be held in the planetarium theater. Free.
  - You must have completed the Park Volunteer Program in order to help with the public program. If you have, and have been trained, please show up at least 30 minutes prior to the official start time.

pecial Events:

- **Astronomy Day - May 18, 2024 - 1p-4p; 8:30p-9:30p**
  - Come help share the fun of astronomy with the public. There will be tables with different themed topics plus solar and night viewing.
- **Annual Club Picnic - July 2024**
  - Date and site location will be sent directly to full BMAC members. BMACers and their families are welcome to enjoy an evening of astronomy-themed games and activities along with a potluck dinner and observing.
- **StarFest 2024 - November 1-3, 2024**
  - Our 39th annual astronomy convention / star gathering for the Southeast United States. Three days of astronomy fun, 5 meals, 4 keynote speakers, unique T-shirt and more!
  - **Pre-registration by Oct. 2024 with full payment is mandatory for attendance. Sorry, no walk-ins nor "visits."**
  - **Link for all the StarFest info including registration and hotel reservation links.**
- **BMAC Dinner - January 2025**
  - This event is for members and their families. Look for an e-mail in January with all the information.

Regular Contributors:

Greg Penner

Robin Byrne

Adam Thanz

Greg Penner is a semi-retired architect living in the Tri-Cities area since 2018. He has enjoyed astronomy since childhood when he received a “department store telescope” and viewed Saturn for the first time. He has been a member since 2018.

Robin Byrne has been writing the science history column since 1992 and was chair in 1997. She is an Associate Professor of Astronomy & Physics at Northeast State Community College (NSCC).

Adam Thanz has been the BMAC Newsletter Editor for all but a small number of issues since 1992. He is the Planetarium Director at Bays Mountain Park and an astronomy adjunct instructor at NSCC since 2000.

Connection:

Bays Mountain Astronomy Club:

- 853 Bays Mountain Park Road; Kingsport, TN 37650
- (423) 229-9447 - **Park Site** - **Club Site**
- Newsletter edited by **Adam Thanz**

Dues:

- Dues are highly supplemented by the Bays Mountain Park Association and volunteerism by the club. As such, our dues are kept at an extremely low cost.
- $16 / person / year
- $6 / each additional family member
- Note: if you are a Park Member (which incurs a separate, additional fee), then a 50% reduction in BMAC dues are applied.
- Dues can be paid in many ways. The easiest way is to pay via the CivicRec online portal. If you are a current member, please log in with your e-mail address and reset your password if you have not already done so. You can then update your membership. Here's the direct **link**. If you want to add family members, then add them via the internal link. You can also pay at the gift shop, by mail or over the phone.

Chapter Background Image Credits:

- **Cover image of Southern Milky Way by Adam Thanz.**
  - *Sony A7ii with Zeiss Batis 2.8/18 lens, f/2.8, 8 sec., ISO 6,400, August 9, 2020.*
- **Table of Contents image of Comet NEOWISE (C/2020 F3) by Adam Thanz**
  - *Sony A7ii with Sony FE 2.8/90 Macro G OSS lens, f/2.8, 8 sec., ISO 4,000, July 15, 2020.*
- **Cosmic Reflections image of the Summer Triangle area of the Milky Way by William Troxel.**
  - *Image captured July 23, 2016.*
- **BMAC Notes painting of the Moon with moon glow by Christa Cartwright.**
  - *Painting based on a photograph of the Moon Christa captured July 2020.*
- **Stellar Observations image of Crescent Nebula by David Reagan.**
  - *This image was taken with a 140mm refractor in his suburban backyard using an AstroPhysics 900 mount, 8.7 hours of 5 minute Ha and OIII subexposures, combined in AstroPixelProcessor as an HOO image and processed in Lightroom and Photoshop. Image captured in 2022.*
- **The Queen Speaks image of a solar halo by Robin Byrne.**
  - *iPhone 7, June 8, 2020.*
- **The Space Place - NASA Night Sky Network image of the Rho Ophiuchi cloud complex by Brandon Stroupe.**
  - *Canon 6D with Canon 2.8/70-200mm lens, f/2.8 @200mm, 20 x 120 sec. exposures, ISO 1,000, stacked in Deepsky Stacker, processed in Adobe Photoshop CC, Skywatcher Star Adventure mount, September 19, 2015.*
- **BMAC Calendar & More image of the Moon by Greg Penner.**
  - *iPhone shooting through a 9mm eyepiece and 12.5" Truss Tube Dobsonian @212x.*
- **All background images used with permission by their authors.**