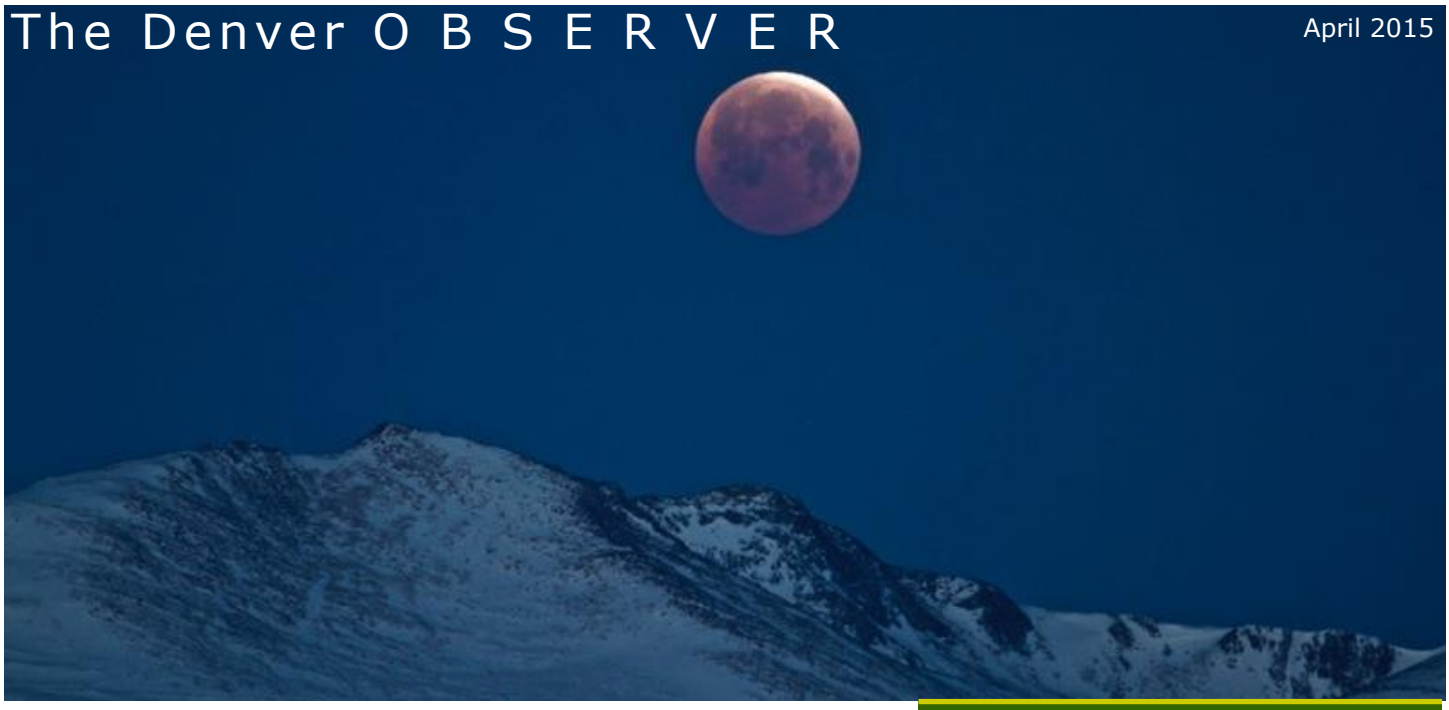
The Denver O B S E R V E R

April 2015



Total Lunar Eclipse on April 5, 2015

From Evergreen along Upper Bear Creek, as the moon set over Mt. Evans. Taken with a Canon 7D, 300mm Canon f/4 L lens on tripod. The moon was just "skimming" inside the edge of Earth's shadow hence the bright limb. DU's Meyer Womble Observatory is on the left side of the Mt. Evans peak.

Image © Ron Pearson

April Sky Calendar

4 ... Full Moon, Total Lunar Eclipse (5:56 to 6:04 am)
8. ..... Jupiter is stationary
10. ...Venus passes 3° south of the Pleiades (evening)
11..... Last Quarter Moon
18. ..... New Moon
22/23..... Peak of the Lyrid meteor shower
25. ..... First Quarter Moon

Inside this issue:

Special Topics of Interest:

- Volunteer Opportunities
- ASTROCon 2017
- "The Search for Earth -like Planets"—Apr 16
- Review of Spring Banquet on March 7 with Roger N. Clark
- Astrophotography Workshop-April 3

April Skies by Dennis Cochran

We could call this month "Venus visits," as is her wont: the Pleiades on the 11th, Aldebaran and the Hyades (the V-shaped horns of Taurus the Bull) mid-month, and the very early moon on the 20th/21st. Mars and Mercury appear low on the west-northwest horizon as well. Meanwhile, Jupiter, high in the south in early evening, creeps up on Venus—or the other way around.

Leo has come around to be near Jupiter in the high south, and the constellation has some nice deep-sky objects and double stars. Galaxies abound here; we'll start with the Leo Triplet (M65/66 and NGC 3628) down-left from the theta star, at about 11h 20m, +13d. It's easy to find in the sky or on a star chart—look for the triangle of bright stars that makes up the haunches of Leo's lion: the theta star is at the 90-degree corner, and the Triplet is about 2 degrees southeast of that. (If you put Theta Leonis on the northwest part of a Telrad's outer circle, the Triplet will be near the middle of your finder scope, where you can center it easily.) The Triplet makes quite a spectacle in low-power views (a 3/4-degree field is a little tight, but 1 degree is lovely), and each of the galaxies is worth observing individually.

A wider group consisting of M95, 96, and 105 lies halfway between the Leo Triplet and Regulus, at about 10h 50m, +12d. Both of these triple-groupings are surrounded by NGC galaxies, with many more scattered throughout Leo. (The Virgo galaxies are just to the east, but we'll wait 'til next month for these.)

Moving to the mane (or "question mark") of Leo, Gamma is the 2nd bright star up from Regulus. Also listed on some charts as Algieba, Gamma Leonis is a binary star system, with its two brightest components orbiting each other at a distance of about 170 AU. They make a lovely yellow-yellow pairing, about 4-1/2 arc seconds apart—a 6-inch telescope will usually separate them, even under our less-than-calm Denver skies.

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Orion Nebula M42 and the "Running Man" NGC 1977 on February 24, 2015

This familiar region was taken from a third floor condo balcony in Keystone. Here is how:
Canon EOS 60Da with an Astronomic clip-in CLS filter and a Sigma 150-500mm zoom lens at 500mm mounted on a Paramount myT. Each set of 50 exposures was shot at 25 seconds exposure with a 5 second delay between shots. Camera settings: f5.6, ISO 1600. No darks, no flats, no bias. The sets were registered and stacked with Deep Sky Stacker, at 80% acceptance, so 40 shots were used.

Processing:
Digital Development stretch (in Images Plus), then three levels adjustments in Photoshop before applying a mask in Nik Plugin HDR Efex Pro to calm down the Trapezium area.

Image © Ralph Goldsmith

President's Message

by Ron Hranac

The recent death of actor Leonard Nimoy, arguably best known for his portrayal of Mr. Spock in the original Star Trek television series and in several motion pictures, reminded me of the influence the iconic TV show has had on people and culture. I've read or heard that many were inspired to pursue careers and hobbies in science and technology because of Star Trek.

I'm old enough to have been able to watch Star Trek when it originally aired on NBC from September 1966 through June 1969. Unfortunately, the show suffered poor ratings and was cancelled after three seasons. Its popularity skyrocketed in syndication, though. I watched all of the episodes again (and again, and again…) in syndicated reruns.

Did Star Trek have an influence on yours truly? Without a doubt. Star Trek doesn't get all of the credit for me being a geek, though. I grew up during the space race and can remember where I was and what I was doing when Neil Armstrong uttered those famous words as he became the first human to set foot on the Moon. Indeed, there was a time when I wanted to be an astronaut.

My maternal grandfather had an especially big influence on my interest in things scientific. His second love was horticulture. In addition to the usual grafting and cross-breeding, he did early work in the 1930s and '40s that would today be called "genetic engineering." He used a chemical called colchicine to kill back buds of some of the plants with which he was working. At the point between unaffected and killed tissue genetic mutations would occur. He had some successes, and some notable failures. I remember him telling the story of a peach that looked spectacular on the outside, but was like a ball of twine on the inside. I have many fond memories of long talks with my grandfather about the Theory of Relativity, ancient Egyptian culture, and so on.

Like many from my generation, I enjoyed building model airplanes, submarines, and whatnot. A neighborhood friend and I used to construct

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Did Star Trek inspire you to pursue a career or hobby in science and technology?

Or what other decisive moment was it?

When did you have that first look through a telescope?

DAS SCHEDULE

April

3. DAS General Membership Meeting at Olin Hall (Begins at 7:30 P.M.).
10. E-Board Meeting at Chamberlin Observatory - 7:30 P.M
16. Annual S.F. Emmons Lecture (Colorado Scientific Society) "The Search for Earth-like Planets" American Mountaineering Center Auditorium, in Golden at 7pm

17-19 EGK Dark Sky weekend.

25. Open House at Chamberlin Observatory—Mercury! Starts at 8:00 pm

May

1 General Meeting at DU's Olin Hall, 7:30 pm

8 E-Board Meeting - At DU's Historic Chamberlin Observatory, 7:30 pm

10 -17 Texas Star Party

15-17 Dark Sky Weekend - EGK Dark Site & Brooks Observatory

23 Open House - DU's Historic Chamberlin Observatory - Starts at 8:00 pm

Public nights are held at Chamberlin Observatory every Tuesday and Thursday evenings beginning at the following times:
March 10 - September 30 at 8:30 P.M.
October 1 - March 9 at 7:30 P.M.
Open House costs: If the skies are clear, $3/person ($5/family), $1/person in inclement weather.
Costs to non-members are: $3.00 adults, $2.00 children and students with ID.
Please make reservations via our website (www.denverastro.org) or call (303) 871-5172.

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*The **Executive Board** conducts the business of the DAS at 7:30 p.m. at Chamberlin Observatory.*
Please see the Schedule of Events for meeting dates. All members are welcome.
http://www.denverastro.org

An unfamiliar Globular Cluster, NGC 6397

It is so far south that it never rises in Denver. I used remote telescopes in Australia over the internet. Luminance: 30 minutes total, on a Takahashi TOA 150mm with SBIG STL-6303 CCD camera. Color: 15 minutes total, using a Takahashi FSQ 106mm telescope with SBIG STL-11000C one-shot color CCD. 3 minute subimages. Processed with Maxim DL, Deep Sky Stacker, and Photoshop.

Image © Don Lynn Goldsmith

Additional Volunteer Opportunities

A Call for Help!!

Treasurer/ Bookkeeping:

Newly elected E-Board officers and trustees were officially seated on the March 7th spring banquet. The position of **Treasurer** is still open, and must be filled so that our tax exempt status as a 501(c)(3) organization is not jeopardized. The Treasurer's position requires accounting or financial experience. In order to reduce the workload of the Treasurer, we're also looking for someone with **bookkeeping experience** to help with bookkeeping activities separate from the Treasurer's position. If you have an interest in serving in one of these roles, contact DAS President Ron Hranac at

president@denverastro.org.

Newsletter Editor:

DAS member Bernd Christensen stepped up to serve as Interim Editor of The Denver Observer. Bernd is available to do this until about mid-year. His schedule has now been finalized, and the very last issue that Bernd will be available to get out the door is the June 2015 issue. That means we're in need of an editor to take over the reins of our newsletter. If this is something that interests you, contact DAS President Ron Hranac at

president@denverastro.org, or let one of the E-Board members know. Prior experience with editing, publishing, or software such as Microsoft Publisher is helpful.

We need a DAS Member to take on the position of Treasurer to secure our status as a 501(c)(3) tax exempt organization !!

Zach Singer has stepped up to become the Newsletter Editor.

Thanks Zach for helping!!

About the DAS

Membership in the Denver Astronomical Society is open to anyone wishing to join. The DAS provides trained volunteers who host educational and public outreach events at the University of Denver 's Historic **Chamberlin Observatory**, which the DAS helped place on the National Register of Historic Places. First light at Chamberlin in 1894 was a public night of viewing, a tradition the DAS has helped maintain since its founding in 1952.

The DAS is a long-time member in good standing of the **Astronomical League** and the **International Dark Sky Association**. The DAS's **mission** is to provide its members a forum for increasing and sharing their knowledge of astronomy, to promote astronomical education to the public, and to preserve Historic Chamberlin Observatory and its telescope in cooperation with the University of Denver.

The DAS is 501 (c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the DAS-General Fund and the Edmund G. Kline Dark Site Fund.

More information about DAS activities and membership benefits is available on the DAS website at *www.denverastro.org*.

Denver Astronomical Society

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One Mile Nearer The Stars

The dominant planet in the winter night sky this year, Jupiter with the "red" Spot: TEC 140mm on an Astro-Physics AP900 GTOCP3 with a TeleVue Powermate 5X. Imaging with a ZSO ASI 120MC CCD camera. Jon took this from his home in Larkspur. He commented on the marginal, but acceptable seeing, an issue we face almost every time we put out a scope here.

Image © Jon Martin

President's Message

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homemade balsawood rockets that we launched from his driveway with firecrackers. Sometimes they flew across the yard, but more often than not they blew to pieces on the launch pad.

In the late 1950s and early '60s my dad would occasionally take me with him to the dump – landfill in today's vernacular. The fun part of those trips was that the employees who worked at the dump would separate old radios, TVs, and small appliances from the regular trash and set them aside in a pile. Sometimes I was able to convince my dad to let me take an old radio or similar gadget home, where I would proceed to disassemble it to see if I could figure out how the thing worked.

When I set up a telescope on the lawn next to DU's historic Chamberlin Observatory during DAS open houses, I'm occasionally asked how long I've been interested in astronomy. That's a tough question to answer. While in elementary school, a childhood friend's parents bought him a telescope with which he said he could see Saturn's rings. I never had a chance to look through his scope, but I thought it was pretty cool that he was able to see the distant planet. I also remember lying in our backyard in the early 1960s and watching for satellites to pass overhead. I didn't get my first telescope until the 1980s, although I definitely had an interest in the night sky well before then.

Looking back, there was no single factor that sparked my interest in science and technology. It was definitely a combination of things – family influence, timing (think space race and similar), good teachers at school, neighborhood friends, and the cultural impact of TV shows such as Star Trek. Even the campy Lost in Space TV show, partly inspired by the much better sci-fi comic book Space Family Robinson, had some impact. I'm grateful that the science and technology bug that bit me at an early age had a life-long impact, and set a foundation for a love of astronomy that is able to be shared through DAS.

April Skies

(Continued from page 1)

If you like long-period variables, R Leo is 5 degrees west of Regulus, at 9h 48m, +11.5d. Over a 312-day period, this Mira-type variable star brightens and dims through a 7-magnitude range, from 11.6 to 4.4. During the dim part of its cycle, you'll need at least a small telescope to see it, but at its brightest, it should be visible to the naked eye when you're away from city lights. Watch it for a year and see what a change of 7 mags looks like!

Finally, this is supposed to be a favorable year for the Lyrid meteor shower. It will peak in the early morning of Thursday the 23rd, while the moon will be setting around midnight, leaving the skies dark. (The shower's radiant is coming up in the northeast at 10pm and will be roughly overhead at 4am.) Though the hourly rate for this shower isn't as high as for others, some of these Lyrids may be bright.

Recap of the Annual Spring Banquet on March 7

Roger N. Clark

The Denver Astronomical Society's annual spring banquet, held this year on Saturday, March 7th at the Embassy Suites Denver Tech Center, was a resounding success. The venue was nice, the food and service good, many DAS volunteers were recognized – congratulations to David Shouldice for being named the recipient of the Bill Ormsby Memorial Volunteer Award – and our own Roger Clark gave a great presentation on nightscape photography with DSLR cameras. One banquet attendee called Roger's images "eye candy," an appropriate description. A big tip of the hat to DAS Vice President Stuart Hutchins for organizing the banquet!

In addition to David's recognition, plaques of appreciation were presented to outgoing E-Board members Lisa Judd, Digby Kirby, Dena McClung, and Luis Uribe. Tim Pimentel was recognized for his service as chairman of the Van Nattan-Hansen Scholarship Committee, and Naomi Pequette for her service as External Outreach Coordinator. Patti Kurtz was recognized for her many years as editor of The Denver Observer.

E-Board member Chuck Habenicht presented pins and certificates to 51 DAS members who have volunteered their time during the past year.

E-Board officers and trustees elected during February's annual membership meeting officially took their seats during the spring banquet. Officers for the next year are President, Ron Hranac; Vice President, Stuart Hutchins; Secretary, Jeff Tropeano; Treasurer, position open; and Past President, Ron Pearson. The new trustees are Johnny Barela, Jack Eastman, Joe Gafford, Chuck Habenicht, Ed Scholes, Sorin, Ken Sturrock, and Dan Wray.

The DAS's annual spring banquet was a resounding success.

Roger Clark's images were "eye candy"!

ASTROCon 2017—Vendor Organizing Committee – Request for Volunteers

The Astronomical League is fast-preparing for their annual convention in 2017 in Casper, Wyoming. This ASTROCon will be a special one, as it comes on the heels of a total solar eclipse passing right over the city soon after the event ends. So, the whole community is preparing for the onslaught of people from around the world, experienced eclipse chasers as well as those new to astronomy. With such a spectacle in the sky, people who never thought of buying a telescope will probably want one suddenly. Many of ASTROCon's vendors will of course stay for the eclipse and keep selling elsewhere after the convention.

The ASTROCon effort is being done by the Rocky Mountain states (MARS) section of the Astronomical League, led mainly by the Salt Lake Astronomical Society, and the task for the central Colorado clubs (of which DAS is by far the largest) will be to organize the vendors at the Parkway Plaza hotel in Casper, Wednesday thru Saturday of that week. What's needed is basically a call team of four to eight people to turn those vendors that have been offered a booth into vendors that formally reserve a booth. There's an annual meeting in Casper to keep the whole thing on track, so it would be nice to send someone there this year and next. Space at the hotel, prices of booths and tables, and brochures have already been done and sent out to some 250 vendors; now it's time to follow up by phone with individual telescope dealers, astronomical travel and accommodation outfits, specialized optics manufacturers, observatories and museums to fill the slots.

If you're interested, contact Lisa Judd at lm_judd@hotmail.com. Preference will be given to those with some experience in handling vendors (or being one), telemarketing, and traveling with a potentially large and fragile inventory.

The Total Solar Eclipse 2017 already casts a long shadow on the Rocky Mountain Region!

Meet Your Fellow Astronomer

By Dena McClung

Photo shows Bernd Christensen with his largest scope, a Celestron C11 Edge HD

Image © Bernd Christensen

This installment of "Meet Your Fellow Astronomer" features our temporary newsletter editor, Bernd Christensen.

Bernd was born and raised in Frankfurt, Germany, with his brother and sister. His parents founded a plant nursery, where the whole family worked. His childhood adventures were outdoor excursions, including hiking and skiing.

At age 12, Bernd spent a year at a boarding school in Perpignan, France. He was the only German kid; the 45 students ranged in age from six to eighteen years of age. They shared a large farmhouse nestled in the end of a valley, far from town and from light pollution. Students spent half their day doing the farming and chores at the self-sustaining facility, and half the day studying.

Two former students - astronomers at Bureau des Longitudes, the French astronomy and geodesic institution- returned to give evening lectures, and Bernd's interest in astronomy was piqued.

Back in Germany that winter, Comet Kohoutek appeared in the skies, and Bernd got his first telescope, eager to see it in more detail. The first time he searched for it, he found an orange spot that displayed some rays, but he soon realized that he was looking at the wrong time and in the wrong part of the sky - he had seen a very blurry Mars through his un-collimated telescope. Once that was addressed, his luck improved immensely. He used that scope for several years, even taking it on ski trips to the Alps.

Bernd wanted to be an astronomer, but settled for down-to-earth physics instead. He earned a masters degree, then a doctorate degree in biophysics, specializing in energy generation in living cells. Wanting to continue in research, Bernd and his wife Claudia moved to New York City in 1987 for a year of post-doctorate work at the Rockefeller University in Manhattan. His research involved creating a membrane-based molecular transistor system. Living there on a limited income was quite an adventure; however, Claudia became an expert tour guide and freebie finder.

At the end of that year, they took a four-month trans-Pacific sojourn before returning to work. Bernd changed career fields to chemistry, taking a research position with Hoechst. This led to another international move in 1995, this time to Sweden. While there, he found an 8" Celestron on a wedge mount in a photography shop, took up observing again, and began doing astrophotography. He joined an astronomy club in Lund and photographed Comet Hale-Bopp.

Upon returning to Germany in 1997, he became active in a Frankfurt astronomy club, and bought a SBIG ST-237 CCD camera. He added a Hyper-Star accessory allowing him to do wide-field astrophotography. He likes this technique because of the wide field, fast exposures and relatively easy setup.

Bernd has observed the night skies in Namibia, where it was so dark that Venus and the Milky Way cast shadows. He also observed from the Canary Islands and visited the 10.4 meter segmented telescope at Observatorio del Roque de los Muchachos.

Bernd and his family (which now includes two daughters) are near the end of their current three-year stay in Colorado. During their time here, they've enjoyed the mountains, the sunshine, and trips to national parks. He has yet to visit the Dark Site and also hopes to travel to New Mexico before leaving in late spring.

In March, Bernd was speaking at the German National Amateur Astronomy Association's spring conference; his talk about the comparison between North American and German clubs was well received.

Upcoming Event on April 16: "The Search for Earth-like Planets"

Colorado Scientific Society Annual S.F. Emmons Lecture

We wanted to share the announcement about the upcoming annual S.F. Emmons Lecture sponsored by the Colorado Scientific Society (CSS).

CSS tries to include a diverse range of topics relating to earth science, and this year the lecture will be "The Search for Earth-like Planets" by Dr. Tom Barclay, of the NASA Ames Research Center and the Bay Area Environmental Research Institute.

Tom Barclay was recently named Director of the Kepler K2 mission, to continue the search for exoplanets using the Kepler spacecraft.

The talk will be at **7 p.m., Thursday, April 16**, at the American Mountaineering Center Auditorium, in Golden. There is no charge to attend and everyone is welcome.

More information can be found on www.coloscisoc.org

The Search for Earth-like Planets" by Dr. Tom Barclay

Thursday, April 16, 7 p.m., at the American Mountaineering Center Auditorium, in Golden.

Outreach Volunteer Opportunities

You will see outreach opportunities here and on the DAS website. We are still in need of volunteers in April and May for either of the events below. Please email Lindsey Shaw at external@denverastro.org if you can assist. Thank you!

April 12, 8am-12pm:
Frank Shorter Race4Kids Health 5K and Expo at the 1STBANK Center in **Broomfield**. We have been invited to set up a table at the expo and some scopes outside for solar viewing.
April 17, 7:30pm:
Candelas Star Party at Candelas Swim and Fitness Club at Townview in **Arvada**. We have been invited again this year to bring out scopes for some night time observing.

May 7 (between 12:30pm-2:30pm) or May 8 (between 7:45am - 2:30pm): This is a request lecture by **Aurora** Quest K-8 in Aurora for a "Mythology of Constellations" If you are interested in putting together a presentation (or already have one) and are available during either of the time slots proposed, please let me know, and we can work with our contact at the school to get something scheduled.

May 9, 9am-3pm: Scout Day at **Dinosaur Ridge** in Morrison. Cub Scouts and Webelos will be working on obtaining their astronomy badges, and they have asked DAS to coordinate an activity to fulfill one of the requirements. I will send more details including badge requirements to those who sign up, and volunteers can brainstorm together on an appropriate activity.

May 31, 10am-4pm: **Space Day** at the Denver Museum of Nature and Science. We will be conducting solar observing on the West patio and hosting a table with an interactive activity inside the Space Odyssey exhibit. This event will be on a Free Sunday, so it will be packed (they are expecting 11,000 visitors!!) and therefore a tremendous outreach opportunity. To avoid parking fiascos, it is suggested that you arrive **no later than 8:30am.** When RSVPing, please inform me on whether you are participating in solar observing or manning the table. I will work with those choosing to man the table on devising an appropriate interactive activity. It has been suggested to set up some scopes next to the table and explain to visitors how they work and/or also showing and explaining astrophotography. More details will be sent later to those who RSVP.

Some of the exciting Outreach opportunities:

Frank Shorter Race4Kids Health 5K and Expo

Space Day at DMNS!!

April General Meeting:

"AstroImaging for Members by DAS Members "

Members shared their results in Astrophotography, what it took them to get there and why it is exciting for them.

You could feel the suspense from the 60 visitors in Olin Hall when Stuart introduced the presenters who were showing examples of their work, discuss their imaging setups and what excites them about astrophotography. And we were not disappointed!

Jeff Tropeano started off with his 1.5-year journey from photography into astroimaging. For him, it was "easy to learn, but difficult to master." He does not get himself into "pixel-peeping".

Kyle Williams found astroimaging to be "patience-trying" and a good way to learn Astronomy. His equipment evolved with his experience. Like others, he emphasized a strong, sturdy mount to be a key to success, because "every minute is precious." He found Astrobin to be a helpful web resource as a picture repository and inspiration for own work.

Sorin took us from Seattle to Denver and from one day to one hour per picture processing time as a "pixel-peeper". For him, it is a combination of Art and Science and a way to have fun.

Darrell Dodge admitted he started the wrong way with his ST-8 CCD camera. His example of how he processed recent images of the starburst galaxy M82 was a stunning demonstration of where amateur astroimaging can take you today.

Joe Gafford's decades-long journey and video of the Scorpius/ Sagitta/ Scutum region of the Milky Way, zooming into specific areas in high resolution were a fitting closure of the presentations.

The ensuing discussion focused on how to promote training and mentoring within DAS, like a specific e-mail group, posting these presentations on the DAS YouTube channel and schedule small group workshops at the Dark Site.

There were a lot of tips for both beginners and experienced Imagers. Thanks to all contributors who made this a big success! More to come!

By Bernd Christensen

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