

NOVA

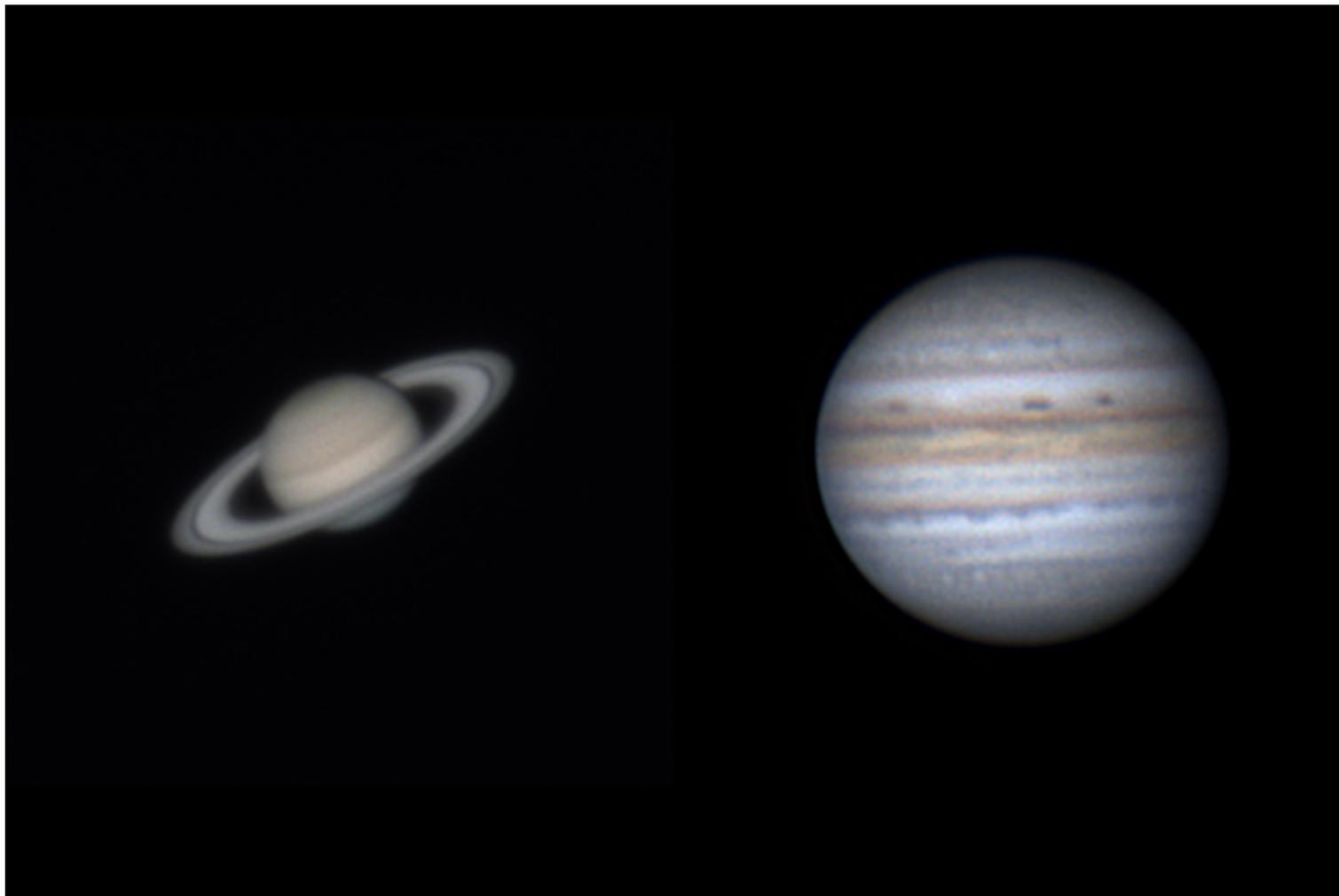


Official Newsletter of the Salt Lake Astronomical Society
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SLAS Newsletter's 51st year of publication.

Please Welcome The Newest SLAS Members!

Name	Name	Name	Name
Campbell, Nikkeve	Guinn, Bob	Scheer, Brenda	Thornton, Colby
Chrysostom, Tai	Harris, Scott	Shelton, Lilian	Thueson, Kade
Cokinos, Christopher	Hunt, Lindsey	Steele, Ronald	Thueson, Marci Anne
Cox, Fred C	Lane, John L	Stout, Matt	Zorn, Heidi



Russ Klvacek got these shots of Saturn on 3 July and Jupiter on 4 July 2021

How SLAS Influenced One Member's Life

Submitted by Mike Hurben

I joined SLAS in April 1979, when the newsletter was The Scope Jockies' Journal (Editor note: That really was how it was spelled.) and the "coup" was about to occur. The politics were beyond me – I was twelve years old at the time, the only kid in the club. I do remember a contentious meeting, and someone explaining the meaning of the word "proxy" to me.

Sometime in the autumn of '78, with Venus up after sunset, I had my astronomy epiphany, and I asked my folks for optics better than the cheap Bushnell bins (binoculars) on hand. In the glass cases at the local K-mart camera bar was a selection of small telescopes bearing the imprint of their house brand, Focal ("Precision Made" the boxes declared), and I pleaded for one with zoom capabilities. It came with an alt-az mount and a table-top stand, hardly suited for astronomical use, so I clamped the legs of the little tripod to the top of an aluminum step ladder.

I scoured the astronomy shelf at Whitmore Library before discovering the Hansen Planetarium, which would become a place most wonderful and sacred to me (and even more magical in my memory now). It wasn't for the shows, but the books, sky charts, the rack of of Sky and Telescope... and that most erudite, enchanting little library upstairs. Somewhere behind that fountain and up those lovely twin staircases, I found out about SLAS and SPOC.

During my first years in SLAS there was a lot going on, beside the organizational tumult. The February 1979 eclipse, only partial from SLC, still huge for me. The Voyager spacecraft were tag-teaming Jupiter that year as well, and the planetarium, I recall, at one point hosted a live feed from JPL. In 1980, there would be astronomy on TV (!) – in fact, Carl Sagan's show would cover far more than that, and would fuel even more interest in science in general – for me and many others, I'm sure. Back then, VCRs were still rather expensive and uncommon; it would be several years before my family would procure one. So I recorded every Cosmos episode the only way I could: in audio only, using a tape deck placed next to the TV. I'd listen to those tapes often. (The very first VCR in operation that I ever saw was at Siegfried Jachmann's house, circa 1981; he was showing The Empire Strikes Back. This was unthinkable. You could actually watch a movie in your house!)

My parents, who were going through a divorce during this time, were happy to have me in SLAS; it would distract me and keep me out of their hair. I'd get out to star parties by rotating through a group of members willing to give me a ride; Siegfried, Brent Watson, Nate Goodman, Dawn Werner. I still associate memories of these SPOC and Little Mountain events with the eclectic music that Ken Meyer would play; there are various Moody Blues songs that I cannot hear without a deep recall of summer skies and scopes and friendly, familiar voices.

I remember a SLAS event at Bella Vista Elementary School in Cottonwood Heights, just west of Whitmore Library, where a dramatic aurora display was visible to the north, despite the glare of the city. The only other transitory event of similar magnitude I remember was a spectacular meteor seen by many of us during a Bald Mountain star party, in the northwest sky, that cast brief shadows and left a lingering, glowing train.

I was glad to have been among a select group at a private, planetarium screening of the DIGISTAR system developed by Brent Watson, which used a fish-eye lens projector to display the visualizations he had developed at Evans and Sutherland. There was a "warm-up" act: it was a depiction of a single vertebra in great detail, and it could be spun about any axis and zoomed – at one point the audience would seemingly fly through the hollow center. Then came the main event, a demo of the familiar night sky that could be viewed from other perspectives and so made most unfamiliar. I recall Ursa Major, stars connected with lines, undergoing great distortions as we journeyed towards it. It was like science fiction made real and tangible, right above us on the dome.

During the 1980-1981 school year I was in the eighth grade at Mount Jordan Middle School, where shifting district lines had suddenly transplanted this science nerd, among strangers inclined to mock my $E=mc^2$ and Supernovae Are A Blast t-shirts. Not a pleasant experience. Further, the science curriculum happened to include astronomy that year.

No matter that my classmates already viewed me as quite the odd duck, I could not let stand the idea that anyone in that school might be a greater astronomy authority than yours truly. The young science teacher was absolutely unprepared to have a student half her age who knew more on the subject, and who could (and often did) show her up. I wasn't trying to be mean. It was just that she would leave out so many important details. That poor woman. It must have been exhausting for her.

Dave Chamberlin had come across a number of microfiche machines, which were a novel astronomy tool: putting a slide of a deep sky object in it made a spectacular, huge image to enjoy. I convinced my parents to buy one from him, although we never really had a use for it, as I didn't have any slides. In 1981 I made the pilgrimage to Riverside in a van with a handful of other SLAS regulars. I bought a shirt there with a cartoon of Sagan, sporting a turtleneck and uttering "Billions" ecstatically.

I eventually acquired a 6" Criterion Dynascope and then a used Celestron-8. The latter would find a home in a backyard observatory that my father built: a simple shed made of wood with a concrete floor and a roof on casters that would slide off onto two rails. (This was at 1428 E., 9200 S. in Sandy. I have looked at this yard using Google Maps satellite view over the years and while it is too thick with trees to see much now, it looked as though my observatory had been torn down a by 2010 or so – our family moved out in 1982.)

The C-8 would later be sold, not to fund another scope, but something different... I had come across a Nova article by Robert Harbrecht, which detailed the wonders of the coming computer revolution and how it would be a boon to astronomy. I found this utterly enthralling. I suppose the DIGISTAR demo had something to do with it. With the C-8 money I bought the only affordable computer readily available at the time, the TRS-80 Model I, which featured a cassette tape-deck "drive." To write code you used something called "Level 1 BASIC" which offered 26 numeric variable names (A to Z), two string variables, and one array. Not a lot to work with, but even worse was its whopping 4K (!) of RAM. I eventually told Robert how I sold my scope to buy this machine and that I found it less useful than anticipated. He then came to my house with a couple of those old anti-static tubes full of ICs, and upgraded the RAM (and the BASIC) for me.

By 1982 or so, I would become less involved; simply put, being a teenager, I was captivated by teenage things. Science went into abeyance; so much that I dropped out of high-school, thinking I could make a career as a musician. You can imagine how that panned out. I did turn it around just in time, as my science affinity, long dormant, would wake up, and I managed to sneak into the University of Utah, where I studied physics. I left Salt Lake in 1991, got my doctorate at Colorado State, and have been in Minnesota since 1998, where I've worked as an engineer in the hard disk drive industry (a destiny set in motion by that slow loading, cassette "drive" on the TRS-80?)

I still fancy astronomy, of course, but I've become one of the armchair variety; I don't "do" astronomy because I largely cannot. When I was in grad school, my vision began to fail. I learned that I had a late-blooming case of retinitis pigmentosa, a genetic condition that degrades the cone cells. That means no more night vision, no more peripheral vision. My visual field is constricted to about fifteen degrees in width for both eyes, making me legally blind. The brighter stars I can still pick out, albeit one at a time. When I finally made it to the southern hemisphere as an adult, the Southern Cross was just on the edge of what I could discern. I was glad for that at least.

I had the opportunity in July of 2021 to come back to Salt Lake with my wife and sons and visit the "new" SPOC during a star party. The clouds did not cooperate, but at least they were able to see a few objects, including M-13. When we got back home I found and showed them my own capture of it; the first real astro-photo I ever took, through the old 16" SPOC reflector.

I cannot overestimate the importance of SLAS to me personally, especially as it came so early in my life. Many members were significant, positive influences on me. I will always appreciate the camaraderie and shared love of science this great organization enables.

SALT LAKE ASTRONOMICAL SOCIETY BOARD MEETING

14 July 2021

Board Members in Attendance: Aleta Cox, Jamie Bradley, Daland Speirs, John Drabik

Other Members in Attendance: Joan Carman, Patrick Wiggins, Rodger Fry

Location: Denny's 500 South 300 West, Salt Lake City, Utah

President Aleta Cox called the meeting to order: 7:01 PM

Aleta provided an Agenda to Board Members before the meeting. She noted that Tom Sevcik will be unable to attend in person.

Aleta began with updated discussion on pandemic precautions at star parties and sun parties. Board agreed that we SHOULD inform potential attendees:

- Those feeling sick should stay home
- Follow State guidelines
- We are providing recommendations only

Next up was a discussion of Salt Lake County loaner telescope checks or repairs that may be needed, based on a comment by a recent visitor to a SPOC star party regarding the condition of a telescope he borrowed.

- Rodger suggested that SPOC conduct at least an annual checkup
- Joan noted SLCO has been given a checklist for returned telescopes
- Joan recommends a November check-in of all scopes for checking

Joan noted she had seen some of the telescopes just yesterday and there were no apparent damage or other issues. She also noted that she and Jamie held a check and collimation session for SLCO in February and while some telescopes required adjustment, none were seriously damaged. She further noted that parts for additional loaner telescopes have long delivery times and prices have gone up dramatically this past year, by roughly 50%. The Board agreed that a single report at a SPOC star party is not representative of the condition of all of the loaner telescopes.

Separately, Joan noted that Davis County library system has reached out to her with interest in starting a telescope loaner program.

Rodger reported on upcoming speakers. The July speaker (next week) will be Angela Berti, speaking on Galactic Conformity (characteristics including halo, dark energy, etc.)

There are still no speakers lined up for August or September. October's speaker will be Nancy Chabot on the DART Mission.

Presentations (and General Meetings) will continue to be by Zoom, but Aleta will continue to try to arrange for use of the Salt Lake Community College auditorium. She will also see if Jonathan Barnes is interested in making a presentation to SLAS at an upcoming General meeting.

The Zoom presentations have enabled a wider range of speakers from around the country. The Board agreed we should continue to hold Zoom and dual-mode General meetings and presentations when possible going forward.

Next was the star party schedule. Aleta noted that there are parties in Salt Lake on Friday and at SPOC on Saturday (the 17th). Next weekend, we have a Sun party on Saturday the 24th, but since the annual parade/festival will be held on Friday the 23rd this year and since this is a daylight event, there should be no conflict with other events such as fireworks displays.

Patrick presented the Harmon's observatory architectural plans to Rodger, the SPOC Director. The architect died not long ago and his widow reached out to Patrick to see if SLAS is interested in having them. The drawings are on vellum and done by hand, since the architect preferred that method to CAD drawings. Patrick agreed that they would be appreciated by SLAS.

There was brief discussion of how best to display at least one of them, at SPOC, in memory of the architect. Rodger will find a suitable location and mount. He proposed that have one of the drawings framed, possibly after conversion to a conventional blueprint to keep the originals safe.

John asked about the status of the Michael Soper memorial plaque, made last year in recognition of the sizable donation to SLAS by his father in memory of Michael. SPOC has had minimal activity for over year and a half but that is changing now. Rodger indicated he will be installing the plaque this week.

Patrick reported on the SLAS T-Shirt sale. As of this morning there are 66 shirts ordered. Uptown Embroidery is ready to proceed and the sales page on <http://slas.us> will be closed Sunday. Patrick suggested that SLAS should itself purchase another 6 shirts (two each of M, L, XL) as giveaways for Solstice parties or approved activities. Motion by John to accept Patrick's suggestion but that two size S shirts be added, i.e., 8 total shirts, as there could be children who might win a prize. Second by Jamie. Brief discussion of cost, which should be \$80. Agreement by the Board that this should not be a problem given current SLAS account balances. Motion passed unanimously.

VP report from Jamie. He has been sending star party news releases to media. Patrick offered to send Jamie a list of media contacts he has and Jamie agreed it would be helpful.

Secretary / Treasurer report by John was next. SLAS added thirteen new members in June: Taylor Ryle, Benjamin Ivie, Mark Novak, William Meredith, Clayton Morgan, Sue Guinn, Madeline Trimble, Eliana Krakovsky, Stephanie Richardson, Jeffrey Dyer, Geoffrey Cox, John Lane and Max Stolfe. The Society bank balance is \$34,281.83 after two June expenditures (SPOC repairs and Zoom teleconference subscription for 1 year). Aleta asked if Astronomical League membership dues were paid. John reported that they were paid, in July and will be in the next Treasurer's report. The amount was \$692.50, for dues for 91 SLAS members.

Aleta resumed, regarding upcoming star parties and she asked Daland about operators for the events. He is still in need of operators this week. Daland also reported on an email from Hannah Grober about helping with or sponsoring a star party at Thanksgiving Point; their foundation group is a 501 (c) (3) which is in keeping with prior Board directions. They would like to hold an event called "Stellar Skies" on August 13th at Thanksgiving Point, as a SLAS event or with SLAS as a participant.

During discussion, Board consensus is that this event would be OK but noting that there is already a star party scheduled for that evening. However, it was also noted that some members might be interested in participating. Daland will contact her tonight and let her know that SLAS support is tentative but an effort will be made to find members to support the activity.

Aleta read another email, from someone seeking SLAS support in sponsoring music for minorities at star parties. Consensus of the Board is that we should decline, as the format and content does not align with the SLAS mission of advancement of science and education.

Jamie asked whether there is Board support for a star party at St. Olaf's school, which SLAS has supported in the past. The Board consensus is that we will try to support them by identifying members who may be able to assist at a star party at the school.

In other business, Rodger noted that the Jachmann Memorial Telescope project has not progressed lately and the mount design must be completed. Patrick noted concern over the size and weight as a portable telescope, but also noted that the Clements telescope is also very large, heavy, yet portable. No action taken but discussions on base design will continue. John noted that there is probably adequate funding, received as donations and from excess equipment sales, to cover the cost of fabrication.

Rodger then reported the SPOC complex is doing well and the Ealing, Grim, Bogdan and Clements telescopes are all in good condition. It was noted that the Wiggins Building dome still needs to be sand blasted and painted. Some of the layers of paint are peeling and maintenance is needed.

There being no further business, Daland moved to adjourn. John seconded. Passed unanimously.

Meeting adjourned: 8:14 PM

SALT LAKE ASTRONOMICAL SOCIETY MEMBERSHIP MEETING
21 July 2021

Special Note: Due to the COVID-19 outbreak the meeting was held virtually.

Board Members in Attendance: Aleta Cox, John Drabik

Other Members in Attendance: ~29

Location: Online virtual meeting using Zoom

President Aleta Cox called the meeting to order: 7:32 PM

President Aleta Cox called the meeting to order and introduced the guest speaker, Dr. Angela Berti, PhD, to speak on Galactic Conformity, Assembly Bias and the Galaxy-Halo Connection. She provided a brief biography on how Dr Berti is originally from Portland, OR, received a degree from Harvey Mudd college, then a Masters in San Francisco and her PhD at UC San Diego. She has done post-doctoral work at the University of Utah. She is working on a dark energy project in California at this time, but will be moving back to Utah soon.

Dr. Berti picked up from there. She considers herself to be an astronomer but focused on large-scale studies of galaxies and the universe using data from large surveys and statistical simulations. She is most interested in the large-scale structure of the universe and how it has evolved.

She began her presentation by describing red-shift as a history of the universe, looking back in time. She noted that the further we look the brighter things must be in order for us to see them. She described spectroscopic studies of red-shift which can then be used to compute distance to an object. The eBOSS project performed such work for a large number of galaxies resulting in a sort of 3D model of the large scale structure of the universe.

Large scale structure is a new field and has only been studied in detail for a few decades. So portions have to be computer-modeled to add to available data in order to determine why galaxies tend to clump together and for galaxies near each other to exhibit similar characteristics in many cases. She described this as being related to Lambda CDM [Sec/Treas note: Lambda-CDM is a parameterized version of the Big Bang cosmological model with three main parts: the cosmological constant (Lambda) associated with dark matter, postulated cold dark matter and ordinary matter.]

In their work, they use computer simulations and clumping within the model – areas of large amounts of dark matter – are referred to as “halos”. These are not light halos seen glowing around galaxies, it is just the term used to describe the dense filaments that evolved over time. Galaxies tend to be found in areas where there are strong halos. She showed a slide with the Bullet Cluster and gravitational lensing as proof of dark matter (DM) and showed how a similar effect to lensing can be seen by using a stem wine glass. In the Bullet cluster image she pointed out colors from elemental analysis with a purple haze overlay that represents a simulation of DM in the same region.

She next showed Rubin spiral galaxy rotation curves and showed a simulation of star movements near the outside edges of galaxies and why they behave in odd ways due to DM. She noted that the rotation curves should (without DM) have tapered down on the right as distance from the galactic center decreases. That tapering is not observed.

Next was a discussion of galaxy properties (red shift is “z”) and color-coded distance maps leading to the question why are some galaxies (blue) in higher proportion than other (red) galaxies. Red galaxies are more clustered (dense) than blue. This also leads to clumpy simulated structures similar to what is seen at the telescope.

She went into more detail on halos. That is the term used to describe the “bubble-like” structures that form, not an actual halo / glow. There is a connection between halos and galaxies: The latter form in halo areas and gravity controls the DM clumping. She noted that this model is rather simple and doesn't account for other forces such as electromagnetism, solar pressure zones, etc. and thus is simpler to deal with. This leads to another question: how do we match galaxy clusters to halos or halo clusters?

The interpretation is affected by "assembly bias" in the simulation model, including the tendency to model the biggest galaxies in the biggest halos. This could be incorrect but seems reasonable. She showed two black and white images of halos (dots in the image) where clustering can be seen to form (easier to see dots and smeared areas of early clumping, in black and white). She noted that while this appears reasonable and similar to galaxy observations it doesn't account for other important factors. For example, how does halo assembly affect galaxy properties (since galaxies "relatively" near to each other are often similar with regard to star formation or quiescence. She showed a simulation video across 13 billion light years with filamentary threads between halos that might account for this.

This similarity in galaxies is referred to as Galactic Conformance – the title of the lecture. She showed how galaxies tend to group, at megaparsec scales and how if, for example, the central galaxy of that group is a blue star-forming galaxy then other galaxies in the halo will also tend to be blue star-forming galaxies. However, she warned that this is a statistical effect and is very subtle. Could the similarity be due to tidal fields of some sort in the halos, limiting their growth and their ability to pull in other matter and thus stifling star formation? This is unknown. Dr Berti then held a Q&A session.

Where does dark energy fit? The homogeneity of DE appears to push the entire universe apart at an increasing rate – but it doesn't appear to push apart DM. Expansion is homogeneous and DE seems to be too. A listener noted that "between an immovable object and an irresistible force, the immovable object seems to win". Dr. Berti noted that DM (and the attractive force of DM) appears to win over DE at all but the largest scale.

Were SMBs formed by DM and then the SMBs led to galactic formation by pulling in needed ordinary matter? In other words, could SMBs (primordial) offset DM as the assembly mechanism? This is another area of research today.

Dr. Berti's presentation ended at 8:35 to a round of applause from the audience.

Business Meeting

Aleta switched to business items with several announcements:

- 7/24 – Sun party on Saturday, details on the slas.us site
- 7/30 – Star party at Wheeler historic Farm
- 7/31 – Star party at SPOC
- 8/13 – Star party at Cougar Harmons
- 8/14 – Star party at SPOC
- 8/21 – Sun party but may be cancelled due to a conflict for the operator
- 8/21 – Star party at SPOC, held in conjunction with Stansbury Days. Aleta noted that this is near a full moon but will be held anyway as part of a long-standing tradition of SLAS to support Stansbury Days.

It was noted that, as usual, star parties and Sun parties are subject to weather conditions.

Aleta noted that elections will be coming up soon and that people should start to consider who would like to run or who they would like to nominate. She noted that the current Secretary/Treasurer and the two Board Members At Large, are not eligible for a third consecutive term under the SLAS Constitution. Those positions plus President and Vice-President are open.

Patrick announced that orders for the SLAS t-shirts are no longer being accepted and the vendor, Uptown Embroidery, is working on them now. They should be done in a few weeks. Patrick will pick them up from Uptown and bring to next month's board meeting. Aleta will get them from Patrick and she will be the distribution point. She will bring them to star parties, etc., but you can contact her to arrange pickup.

If you have questions about the t-shirts, Aleta would prefer contact by e-mail, rather than phone calls.

There being no further business, Aleta adjourned the meeting.

Meeting adjourned: 8:44 PM

SALT LAKE ASTRONOMICAL SOCIETY BOARD MEETING
11 August 2021

Board Members in Attendance: Aleta Cox, Jamie Bradley, Daland Speirs, Tom Sevcik (via Zoom), John Drabik

Other Members in Attendance: Joan Carman, Patrick Wiggins, Rodger Fry, Tony Sarra, Bob Moore, Alpine Stringham. Mike Clements, Charlie Green, and one other member attended via Zoom

Location: Denny's 500 South 300 West, Salt Lake City, Utah, and via Zoom

President Aleta Cox called the meeting to order: 7:01 PM

Aleta began with discussion of the upcoming elections. Nominations must be submitted to the Secretary [note: send to SLASSEC@drabik.org] before the end of day, August 31, 2021. Only Jamie and Aleta are eligible to run again (for any office); the current Sec/Treas and Board Members at Large have 2 consecutive years in office, the maximum allowed under the SLAS Constitution.

Election candidates will be announced at the September General Meeting. If more than 3 nominees are listed for any given position, a primary election will be held at the September General Meeting (to reduce the field to 2 candidates). The election will be online, starting after the September General Meeting, and will continue until midnight the evening before the October General Meeting.

Those elected will be announced at the October General Meeting. Aleta will send a SLAS Blast tomorrow to remind SLAS members to submit nominations (for themselves if interested, or for others, who will then be asked to confirm their willingness to serve if elected). Patrick will post a link to the SLAS Constitution in the newsletter, In case members wish to examine the election procedures. <http://slas.us/slasbooks/SLASCONSTITUTION.PDF>

Next was discussion of the Solstice Party in December. The first question from Aleta is regarding what we should do for prizes? Patrick suggested that Aleta contact member Ann House, who has very successfully conducted Solstice party activities and prizes in the past. The party will be held at the Midvale Golden Corral restaurant on the first Saturday in December (Dec 4). Several items including SLAS t-shirts and astronomy wall posters have been added to the list of prizes.

In-person Board meetings will continue, with simultaneous use of Zoom. This is aligned to current State and CDC guidelines.

VP Report: Jamie received an email from Jim Corvey from Virginia, who is visiting relatives in the SLC area. He has requested a SPOC tour and star gazing opportunity, before Friday when he leaves. Consensus that we will not be able to fulfill his requests due to the short amount of time, but if an authorized SLAS member would like to show him the site, that is OK. Jamie also reported that he has sent SLAS star party information to KSL but he does not know when/if they will broadcast the details.

Secretary/Treasure Report: Summary: Received \$748.48 for dues and fees in July, plus \$1.58 bank interest. We received \$48.82 in regular donations, and \$6,107.60 in receipts for excess equipment sold (recorded as Donations). We received \$4433.06 for t-shirt sales. Bank balance as of August 1 was \$38,019.87 after expenses of \$692.50 for Astronomical League renewal for 91 SLAS members. We added seven new members in July: Colby Thornton, Matt Stout, Heidi Zorn, Ronald Steele, Christopher Cokinos, Fred Cox, and Marci Ann Thueson.

The Secretary opened a discussion on the potential formation of a Steering Committee to investigate impact and options for SPOC, since there is a proposal before the Tooele Planning Commission and County to put either a multi-story extended-stay hotel or townhomes on land a few hundred yards northeast of SPOC.

Patrick and Rodger attended a recent meeting on the subject and noted that the developer later requested that their application be put on hold while more neighbor input is obtained. Bob Moore, himself a commercial developer, would like to get more information so he can meet with the developer and determine their intent. It was noted that there is no specific time for the

proposal to be re-activated and some members are concerned that if approved, the developer may move very quickly to rip out the street (for replacement) and start construction.

General agreement that a Steering Committee may be needed but not at this time. Also general agreement that we should try to meet the Stansbury council to discuss light pollution at the site, potential adoption of or expansion of dark sky ordinances, and to get specific problems such as the restroom lights fixed.

Aleta described a request for SLAS to put an advertisement in the upcoming Stansbury Days local paper. Rodger has volunteered to do the artwork and believes the ad will help inform neighbors of our work. It may also help to point out the potential issues with hotel/townhome location to citizens. Aleta has been told the ad will cost \$200 for the large size. Motion by John to authorize the \$200 expenditure and to have Rodger create the ad for review by the Board. The ad must be submitted by Monday. Second by Jamie. Passed unanimously.

Bob Moore mentioned the star party at Solitude last Saturday. He thinks the telescope operators should have name tags, perhaps with glow-in-the-dark highlighting of their names so that visitors can find them easily. This could also be useful at SPOC or other star parties. John noted that it may be possible to 3-D print name tags, with the SLAS logo. Bob and John will investigate the cost and possible options.

Daland needs operators for Saturday's star party at SPOC and will be putting out an email requesting help. He would like Ken to add something to the web site that would make it easier to volunteer but not too far in advance so that others get a chance to help. John suggested that the (electronic) list of certified operators always receive emails about the need for help and then other members can sign up as assistants. Daland would also like reminders to be sent automatically so that people don't forget their upcoming operator assignments perhaps a few days before each star party.

Tom noted that schools are starting to open but is unsure if they will have star parties, especially for K-12. So far only St. Olaf's has requested a star party. Tom also noted that Luke has offered to be the operator at the upcoming Deer Valley star party.

Aleta informed attendees that this Friday's star party will be at the Cougar Harmons at about 60th South and 40th West. Saturday is at SPOC.

Observatory director Rodger is waiting for several people to get bids back to him on sand-blasting the SPOC dome. It needs to be stripped, primed, and painted, and he would like to see that done before Fall. He reminded attendees of the star party this Saturday at SPOC and also the following Saturday at SPOC for Stansbury Days. Rodger is also continuing to look into construction options for the Jachmann Memorial telescope. John informed him that there should now be enough money from donations and the excess equipment sale (listed as Donations) to cover the construction costs for the platform.

Joan spoke about the Library Loaner program and showed attendees a July article from Salt Lake Tribune about the program. Joan has maintained contact with Salt Lake County Libraries: they currently have 48 scopes and there are over 200 pending holds from library patrons to check them out. There continue to be shortages for astronomical parts for additional telescopes.

Joan reported that on the the National-level loaner telescope meeting, with representatives from all 50 states that they have only managed to secure 11 telescopes in the past month. The shortages are expected to continue and this may affect telescopes for Salt Lake libraries. Joan also noted that Hansen Planetarium is still likely to donate telescopes to the County libraries (about 18 telescopes).

Patrick reported that the new SLAS t-shirts are delayed due to the pandemic affecting operations and shipping. He does not have an expected delivery date yet.

Patrick also noted that Alta Club in downtown SLC is looking for someone to present to their group. The topic and/or speaker credentials they seek are not yet known.

There being no further business, Daland moved to adjourn. Aleta seconded.

Meeting adjourned: 8:11 PM

SALT LAKE ASTRONOMICAL SOCIETY MEMBERSHIP MEETING
18 August 2021

Special Note: Due to the COVID-19 outbreak the meeting was held virtually.

Board Members in Attendance: Aleta Cox, Tom Sevcik, John Drabik

Other Members in Attendance: ~33

Location: Online virtual meeting using Zoom

President Aleta Cox called the meeting to order: 7:30 PM

President Aleta Cox introduced the guest speaker, Robert Bigelow from Clarke Planetarium, to speak on Perseverance and the Ingenuity helicopter on Mars. Robert is a long-time SLAS member, who received his degree from the U of U, and is a NASA/JPL Solar System Ambassador. Robert started with a map of previous Mars missions and showed locations for missions spanning several decades, followed by a detailed map of Jezero Crater where Perseverance landed.

He noted the similarities between flow indicators on Mars, and those around delta areas on Earth including wash areas and surface changes. Next, he described the landing process and the obstacles that were overcome to get Perseverance into a good location, although the original hope was for something closer to the transition zone.

Despite the somewhat greater distance, they still expect to find signs of life if it existed on Mars in the past. Upcoming missions will return collected samples (which Perseverance will place into special, sealed containers, and leave at various points on Mars' surface for a later mobile platform to pick up, return to the associated ship,, and return to Earth). Robert also noted some of the recent mission successes, including the MOXIE oxygen generator (reported on to SLAS members 2 months ago), and gave an overview of the many other scientific instruments on board Perseverance.

Next up was a detailed review of the status of surface features like "Artuby", which is a layered area of shore line. He described sample capture in detail, including how the samples are extracted from bore-holes and placed into the sample containers for later return to Earth. He noted that a first attempt failed due to crumbling of the extracted sample, but they have determined ways to resolve that problem for future samples.

The Ingenuity helicopter was his next topic. There are numerous challenges for the helicopter, especially low lift capability due to the thin atmosphere (only about 1/90th of an Earth atmosphere). Fortunately, there have been no significant problems with dust on the solar panels, which would impact battery charging.

The weaker gravity on Mars also helps: Ingenuity weighs about 4 pounds on Earth's surface, but only about 1.5 pounds on Mars. Data transfer is via the Perseverance rover. Robert showed the path that the vehicles have taken so far (surface and "air"), and noted that the paths shown include updates from a flight just 2 days ago. The rover is also continuing to move in the same area. Significant core sampling is still to come, in the Three Forks area. Robert showed the intended path into other areas in and around the current sites.

Robert fielded questions beginning at about 8:10 PM. One of the attendees asked about the Wright brothers relationship to Ingenuity, and noted that a small piece of the Wright brothers flyer is attached to Ingenuity. Robert noted the significance of the connection between the first powered flight on Earth, and the first powered flight on Mars. Others present asked various additional questions about the equipment, missions, and sample returns in the future. Robert concluded his presentation at 8:17 PM.

Business Meeting

Aleta switched to business items with several announcements. First was a discussion of the upcoming elections. She reminded those in attendance that nominations are due (send to slassec@drabik.org) before midnight on August 31. Candidates will be contacted to verify they will serve if elected, and will be announced at the September General Meeting.

Next, upcoming sun and star parties this coming Saturday (8/21) were noted as being part of Stansbury Days. Telescope operators are needed. Please check the slas.us website to volunteer, or send a note to Daland Speirs (eclipserd@yahoo.com). Other upcoming parties are:

- 8/21 – Sun party, but may be cancelled due to a conflict for the operator
- 8/21 – Star party, at SPOC, in conjunction with Stansbury Days
- 8/27 – Star party at Wheeler Farm, SLC
- 8/28 – Star party, at SPOC
- 9/10 – Star party at Bangerter Harmons 9/11 – Star party, at SPOC

Aleta also told attendees about the SLAS t-shirts. They have not been received yet, but are expected soon. [UPDATE, the t-shirts have arrived and will be picked up at Uptown Embroidery on Wednesday 8/25. Aleta will hand them out at upcoming Board or General meetings or at other times until they are distributed].

Our guest speaker on 9/15/2021 will be Dr. Jed Hancock from SDI, speaking on the Osiris-Rex asteroid probe. An interesting connection for this project is that the collected core samples will be returned to the Utah West Desert region in 2023.

SLAS recently welcomed a new young member, and he is interested in getting certified as a telescope operator. John noted that he had encouraged the young man to get certified after showing him and his aunt the SPOC complex. Rodger, SPOC Director, noted that he has no objections, but also noted that the SPOC key will have to be kept by the parents, and that one of his parents will have to accompany him when he is operating the telescope, even if he is acting as a secondary operator for one of the telescopes.

There being no further business, Aleta adjourned the meeting.

Meeting adjourned: 8:25 PM



Scott Stringham got this shot on 28 August 2021 of members and their telescopes along SPOC's SPOC Walk for the evening's public star party.

SLAS Member Information

The SLAS Member Information file is available at <http://slas.us/slasbooks/NEWMEM.PDF>.

Loaner Telescopes For SLAS Members

SLAS has several scopes available for loan to current SLAS members. Check the SLAS website under "[Membership Benefits](#)" for details.

Contact Us board@slas.us

2021 SLAS Board of Directors

President	Aleta Cox
Meetings	
Vice President	Jamie Bradley
Publicity, PR and Web Content	
Secretary-Treasurer	John Drabik
Membership Dues & Renewals	
Board Member at Large	Tom Sevcik
SPOC Star Party Coordinator	
Board Member at Large	Daland Speirs
School & Special Star Parties	

Appointed Positions

Astronomical League Contact	Aleta Cox
Equipment Manager	Luke Moses
Historian	Patrick Wiggins
NASA Night Sky Ambassador	Ann House
Newsletter Editor	Patrick Wiggins
Observatory Director	Rodger Fry
Private Star Party Coordinator	Don Colton
Webmaster	Ken Warner
ZAP Grant Writer	Jim Keane

SPOC Advisory Committee

Chair through 01 FEB 2024	Rodger Fry
Member through 01 FEB 2024	Bob Moore
Member through 01 FEB 2024	Patrick Wiggins
Member through 01 FEB 2024	Luke Moses
Member through 01 FEB 2024	Jim Keane
Member through 01 FEB 2024	John Drabik
Member through 01 FEB 2024	Bill Kennedy
Member while SLAS President	Aleta Cox
Member as Obser. Dir. Emeritus	Bruce Grim

SPOC Telescope Instruction Coordinators

Refractor	Marlene Egger
Ealing	Jim Keane
Grim	Rodger Fry
Clements	Leslie Fowler

Events Calendar

September 2021

- 08 Board Meeting at Denny's Restaurant, 250 W 500 S, 7:00 pm
- 10 Star party at Bangerter Harmons, 125 E 13800 S, dusk to 10:00 pm
- 11 Star Party at SPOC, dusk to 10:00 pm
- 15 General Meeting at SLCC's Rampton Technology Building, Taylorsville Campus, 7:30 pm
- 18 Sun party, 6400 S 1100 W, 9:00 am to noon

October 2021

- 01 Star Party at SPOC, dusk to 9:00 pm
- 02 Star Party at SPOC, dusk to 9:00 pm
- 13 Board Meeting at Denny's Restaurant, 250 W 500 S, 7:00 pm
- 16 Star Party at South Jordan Harmons, 10507 S Redwood Rd, South Jordan, dusk to 9:00 pm
- 17 Star Party at SPOC, dusk to 11:00 pm
- 20 General Meeting at SLCC's Rampton Technology Building, Taylorsville Campus, 7:30 pm

November 2021

- 10 Board Meeting at Denny's Restaurant, 250 W 500 S, 7:00 pm
- 17 General Meeting at SLCC's Rampton Technology Building, Taylorsville Campus, 7:30 pm

December 2021

- 04 Solstice Party at Golden Corral, 665 E 7200 S, 7:00 pm
- 08 Transitional Board Meeting at Denny's Restaurant, 250 W 500 S, 7:00 pm

NOVA is a publication of the Salt Lake Astronomical Society, a non-profit organization. Nova contains minutes of meetings, Board member names & contact info, activities, reports and special club events. The editor of NOVA is appointed by the SLAS Vice-President. Members are encouraged to contribute content. Current editor is Patrick Wiggins, 4099wiggins@gmail.com.