President’s Corner
By David Mathias, 2015-16 President

Wow! What a turnout that was for the Texas Night Sky Festival! If you made it out to Dripping Springs last weekend, you saw a great event and an enthusiastic turnout from AAS members. Kudos to AAS’ Texas IDA liaison, our own Tim Brown, and to all the AAS members who spent a long day in the sun, on their feet, or straining their voices to make the event such a success!

For much of the day, I shuttled from our booth to the Starry Skies booth to the Solar System Walk and back out to the solar scopes. At the booth I met with 3 or 4 folks who have moved to our area and miss their home astronomical societies. (I hope they decide to follow through and join AAS.) I introduced educators to educators. I handed out lots of cool stuff to excited kids. I talked to young adults who are thinking about continuing their college educations by pursuing their passion for astronomy. And for every one person I touched, I know 5 or 6 other AAS members who staffed the booth during the day likewise were making their own memories and making a difference.

I tend to share a lot of astronomy and space news to the AAS group on Facebook. I know that audience doesn’t reach all our members, so I’ll take a second to highlight some of the groups I regularly share. If you are on Facebook, consider “liking” these pages. If you aren’t, some may find their way into your browser’s bookmarks.

The Texas Space Grant Consortium posts regularly with information for educators. I forward information about workshops, seminars and online presentations that can be integrated into classroom instruction.

http://www.tsgc.utexas.edu/

The Astronomical League is already well-known to our members. One
item I recently reposted from the AI highlighted the Globe at Night campaign for March. Globe at Night is another cool citizen science project you can participate in that focuses on measuring light pollution. See http://www.globeatnight.org/

Texas Parks and Wildlife Department has a nice landing page for Dark Skies as a focus of park activities. They include an events calendar and information on IDA-certified parks within the TPWD portfolio. http://tpwd.texas.gov/spdest/programs/dark-skies/

McDonald Observatory has its own Facebook page. McDonald posts information focusing on UT research as well as topics of interest to non-professional audiences. http://mcdonaldobservatory.org/

San Antonio Astronomical Association and AAS have “liked” each other’s Facebook pages now. AAS members may find their events worth the day trip down, and their feed picks up on news we may have missed. http://sanantonioastronomy.org/

The International Space Station has its own Facebook page. It was a great source of information as Scott Kelly’s year in space was coming to an end, and the photos of Earth and high-altitude views of geographic features are always inspiring. http://www.nasa.gov/mission_pages/station/main/index.html

Lastly, in March, the slate of candidates for next year’s AAS board is presented to members for their consideration prior to elections in April. Please consider if you are able to serve and send communications with your interest to nominate@austinastro.org. Thank you in advance!

My apologies for this edition being short on news. I will have a lot of business travel this month; so, be thinking of me missing our Texas skies while I’m in California.

Clear skies to all!

Come to the March Meetings

When: Friday, March 11, PA @ 6:30 PM, GA @ 7:30 PM
Where: ETC 2.136 - UT Campus, Engineering Teaching Center
Dean Keeton and Speedway

Practical Astronomy
“Conversations on Constellations: a cultural tour from myth to modern”
Dawn Davies will lead a discussion on the ancient stories that birthed our modern day constellations. Explore varying ways that different cultures have created their interpretations of patterns in the night sky. We’ll explore the differences and similarities across several cultures and over thousands of years.

General Assembly
Last month we were grateful to have Ron Carman provide an interactive presentation on basic spectroscopy. This month we are privileged to have Dr. Chris Sneden, whose research is largely based on stellar spectroscopy, speak to us about the real world applications of this fundamental tool for understanding stellar evolution. His talk will focus on the chemical composition of open star clusters using data collected with the high resolution optical and infrared spectrographs at McDonald Observatory. So come on out to get a glimpse of how the professionals capture and analyze rainbows to ferret out the secrets of how the cosmos works.

Nominations and Elections

The Nominating Committee is still working on the slate of officers for the year beginning June 1, 2016.

Positions to be filled are:
President
Vice-President
Secretary
Treasurer
Communications Chair
Equipment Chair
Outreach Chair
Member Services Chair
6 Members-at-Large (an increase from 3 this year due to membership growth)

You may contact the committee members at nominate@austinastro.org

Around March 18 members will receive an e-mail listing nominees with an absentee ballot. The election will take place at the GA meeting on April 8.
Executive Committee Minutes
By Ron Carman, Secretary

January 4, 2016
The meeting was called to order at 7:55 PM by President David Mathias. Other EC members present were Terry Phillips, Ron Carman, Tara Krywoszynski, Brian Lippincott, Joi Chevalier, Carl Lindemann, Dawn Davies and Alan Carruth, constituting a quorum. Also present were Joyce Lynch, editor; Tim Brown, IDA Representative; and Dawn’s son Apollo. Minutes of December EC meeting were approved.

David polled the group, asking all EC members in turn to express thoughts about items they would like to see accomplished by the end of their terms in office. Items included: researching additional COE site, resolving any tax issues, more transparency to general membership, encourage increased participation by general membership, and numerous others.

Terry gave the Vice-President’s report; he has arranged programs for the meetings in January through April. At David’s request half the January Practical Astronomy Time will be used to allow the current officers to briefly describe their duties for the information of all members.

Tara gave the Treasurer’s report; she has e-mailed a notice to all members. She mentioned the upcoming Night Sky Festival to be held in Dripping Springs on 5 March. David moved the AAS contribute up to $500 for this event and encourage additional donations from members. The motion was seconded and passed. David will give Tim more information on the photography contest.

Carl, Alan, and Brian, Members-at-Large, had nothing additional to report.

Unfinished Business: for the proposed EC retreat, Susan Franzén was not available so we need another plan. David asked committee members to give him ideas for alternative plans and ways to help future ECs.

Joi sent a survey from the alternative site review at COE on 5 December. David mentioned that any new site(s) must be compliant with the Americans With Disabilities Act (ADA).

New Business: The AAS had $350 from the past El Dorado Star Party; it was moved and seconded to donate half, or $175, back toward the next ESP. The motion passed. David also reminded everyone that the Nominating Committee needs to be formed in January and he has e-mailed a notice to all members.

David, Joyce, Joi and Dawn plan to meet with Cindy Bower at COE in January to talk more about future involvements at COE.

The meeting was adjourned at 10:01 pm.

Calendar of Events

11 March 2016
General Assembly Meeting
7:30 PM (PA @ 6:30 PM)
ETC 2.136 - UT Campus
Engineering Teaching Center

12 March 2016
Outreach Opportunity
Public Star Party
Canyon of the Eagles

12 March 2016
Messier Marathon
Canyon of the Eagles

4 April 2016
Executive Committee Meeting
7:00 PM
Cafe Express

8 April 2016
General Assembly Meeting
7:30 PM
ETC 2.136 - UT Campus
Engineering Teaching Center

Please see the AAS Calendar of Events webpage for more details:
http://www.austinstarsky.org/events

General Assembly Minutes
By Ron Carman, Secretary

January 8, 2016
The meeting was called to order at 7:45 pm by President David Mathias with a quorum present. David asked any visitors to introduce themselves.

The minutes of the November general meeting were displayed on the screens and approved.

Vice-President Terry Phillips announced that he has programs scheduled and the ETC meeting room reserved through April, but due to examinations will need an alternative meeting site for May.

Treasurer Tara Krywoszynski gave her report; the bank accounts currently total over $30,000, and at the end of 2015 we had 562 members.

Joi Chevalier, Communications Chair, reported that she expects the new website to be ready by the end of January and she hopes to include feature groups. Members may send any items they have for it.

Dawn Davies, Outreach Chair, announced numerous star parties upcoming in January and February.

Domingo Rochin, Equipment Chair, told everyone that EEO training will be held before the Members Only Star Party on 9 January. He is considering making a video of the training procedure and needs a videographer. Any member who wants to volunteer should contact him.

Tim Brown, IDA Representative, reminded everyone of the Night Sky Festival scheduled for March 5th in Dripping Springs. David mentioned that the Executive Committee had voted to donate $500 for this event. Terry also mentioned the 2017 Astronomical league Convention will be in Casper, Wyoming, which is in the path of the total solar eclipse which will occur then, so make reservations early if planning to go.

David also said that he is considering making videos of the programs at general meetings and practical astronomy sessions (with the consent of the presenters) and he is also looking for a videographer. Carl Lindemann said he would consider being the videographer.

Next David made a motion to the assembly that the AAS grant honorary membership to Darin and Duna Koch in recognition of their many years of service. The motion was seconded and, after discussion, passed unanimously. David then presented Darin with a plaque confirming their honorary membership.

David also reminded everyone about the Members Only Star Party scheduled for the next evening, January 9, and also of the chance to gather for pizza after the meeting at Varsity Pizza & Pints.

Vice-President Terry Phillips then introduced two programs: Casey Donnellan showed his computer games Blue Marble and Game Jam for estimating planetary climates. Next Darin Koch demonstrated the software Sky Safari and how it can be used to navigate around the universe.

The meeting was adjourned at 9:50 pm.
January 2016 Treasury Report
By Tara Krzywonski, Treasurer

Deposits

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dues payments</td>
<td></td>
</tr>
<tr>
<td>Checks</td>
<td>$ 0</td>
</tr>
<tr>
<td>PayPal</td>
<td>$310.00</td>
</tr>
<tr>
<td><strong>Dues payments totals</strong></td>
<td><strong>$310.00</strong></td>
</tr>
<tr>
<td>Interest earned-checking</td>
<td>$0.92</td>
</tr>
<tr>
<td>Interest earned-CD</td>
<td>$0.25</td>
</tr>
<tr>
<td>Interest earned-CD</td>
<td>$0.25</td>
</tr>
<tr>
<td><strong>Total interest earned</strong></td>
<td><strong>$1.42</strong></td>
</tr>
<tr>
<td>Outreach donation</td>
<td>$5.00</td>
</tr>
<tr>
<td><strong>Total other income</strong></td>
<td><strong>$5.00</strong></td>
</tr>
</tbody>
</table>

**Deposit Totals January 1 - 31, 2016** $316.42

Expenses

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>COE internet</td>
<td>$62.87</td>
</tr>
<tr>
<td>Draft to open donation savings account</td>
<td>$25.00</td>
</tr>
<tr>
<td>Hardware expense</td>
<td>$44.95</td>
</tr>
<tr>
<td>COE expense</td>
<td>$15.41</td>
</tr>
<tr>
<td>EC Training</td>
<td>$100.00</td>
</tr>
<tr>
<td>25&quot; telescope</td>
<td>$103.13</td>
</tr>
</tbody>
</table>

**Expense Totals January 1 - 31, 2016** $351.36

Bank Balances

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Federal Credit Union Checking</td>
<td>$21,671.59</td>
</tr>
<tr>
<td>University Federal Credit Union Donations Savings</td>
<td>$30.00</td>
</tr>
<tr>
<td>University Federal Credit Union C.D.</td>
<td>$5,808.37</td>
</tr>
<tr>
<td>University Federal Credit Union C.D.</td>
<td>$5,789.18</td>
</tr>
<tr>
<td>University Federal Credit Union Scholarship</td>
<td>$462.96</td>
</tr>
</tbody>
</table>

**Total Cash** $33,762.10

**Total of 591 AAS members as of March 2, 2016**
**Total of 467 AAS memberships as of March 2, 2016**

---

25-Inch Telescope Work

On Saturday February 13 a work crew consisting of Equipment Chair Domingo Rochin, Terry Phillips, Bryan Verhoeff, Canyon of the Eagles astronomer Jim Sheets, and Ed LeCroy installed the recoated mirrors on the club's 25-inch Dobsonian telescope.
History tells us that March comes in like a lion and goes out like a lamb. Maybe that was before global warming: March has already come in like a lamb, with plenty of mild and clear nights, at least here in central Texas. And while that may not last forever, it’s a perfect opportunity to get out and poke around in the spring skies. As usual, a few morsels are below. But whatever you like to chew on, do get out and enjoy!

21 LMi rating EASY star in Leo Minor
RA 10h 07.4m Dec +35d 14.7’
(2000)
Magnitude 4.5

Which star cluster is so close that you can’t see it in binoculars? How about Collinder 265, also known as the Ursa Major Moving Cluster? Centered about 75 light-years away, the UMa Moving Cluster is closer than any other known star cluster. 21 LMi is an outlying member of this cluster, which was first identified in 1869 by Richard Proctor. He determined that the 5 bright central stars of the Big Dipper (in Ursa Major) were moving in the same direction through space at the same speed, a conclusion confirmed 3 years later by William Huggins.

21 LMi is an outlying member of this cluster, which was first identified in 1869 by Richard Proctor. He determined that the 5 bright central stars of the Big Dipper (in Ursa Major) were moving in the same direction through space at the same speed, a conclusion confirmed 3 years later by William Huggins.

R UMa rating MEDIUM variable star in Ursa Major
RA 10h 44.7m Dec +68d 46.3’
(2000)
Magnitude 7-13

R UMa is a pulsating red giant star of the Mira class, closely comparable to Mira in period, range and spectral type. Located in northern Ursa Major about 4 degrees east of galaxy M81, it was the first long-period variable star found in Ursa Major, by Pogson in 1853.

Although it occasionally reaches 6.7 or so at high maximum, R has a usual range of 7.5 to about 13 in a cycle averaging 302 days. When near the bottom of its cycle, R is one of the reddest of the long-period variables; however, the intense color weakens as the star rises to maximum. And as it brightens it does so about twice as fast as it fades, with a min to max time of about 116 days. If you’re interested in following this curve, note that the last maximum of R was 12 November 2015.

R has a peak luminosity of about 250 times that of the Sun. However, it is about 6 times more remote than Mira, with an estimated distance of around 1350 light-years. And it’s also receding from us at about 20 miles per second, so don’t wait too long to take a look!

(Continued on next page)
Leo I   rating HARD
Local Group dwarf galaxy, near Regulus
RA 10h 8.4m Dec +12d 18.0' (2000)
Magnitude 9.8, diameter 10' (1000 LY), distance 250 kpc (800000 LY)

Leo I is a dwarf spheroidal (Hubble type E3) member of our Local Group of galaxies. Lying over half a million light-years away, it's one of the most distant of 11 Local Group dwarf galaxies. Most of the smaller Local Group members resemble this object. Star formation in Leo ended about 10 billion years ago, compared to more than 15 billion years ago for a typical globular cluster like M13.

Visually, Leo I is a swarm of stars magnitude 20 and fainter. Although it has a total magnitude near 10th, its low surface brightness (due to its 10' disk) and its proximity to Regulus (which is 15" south) make it a difficult object. It can be observed with a 17-inch telescope if Regulus is kept out of the field.

If you don't have a 17-inch scope handy, a nice APOD image by David Malin can be found at: http://antwrp.gsfc.nasa.gov/apod/ap991003.html

---

**Image of the Month**

**Congratulations!**

**MICHAEL SCHAFFER**

“Ripples”
Bryce Canyon National Park, Summer 2015

Pentax 6x7, 45mm Lens @ f/5.6, 4-Hour Exposure on Kodak Portra 400 Film
While back I had mentioned I keep logs of star parties I’ve attended. I also mentioned I was close to my 100th star party and should have a party at a party. In working on my logs the other day and looking at some pictures I realized that I had forgotten to add to my logs. I had three outings at Stellar Skies when I actually got to use my setup in late summer of 2015, plus I had two recent public nights I left out.

I mentioned this too, that I’ve never counted any of my personal home observing nights or any binocular nights here. Only star parties where I had to travel to/make the effort to take my personal scope stuff or use the observatory scopes on a Members Night or Public Night.

So now since my first star party at Eagle Eye Observatory/Members Night, this (February 27) was my 104th star party. Kinda bummed I missed realizing my 100th was at Stellar Skies in my-still-under-construction-soon-to-be-really-cool observatory. Like achieving my current 14 (yes, I’m proud of them) AL Awards and Master Observer Award, all this took dedication and effort. Now I’m just 96 hours short of the Master Outreach award which a few dedicated members have already achieved—many kudos to them. For me the Outreach program/awards is harder than all the other awards as I have to socialize/communicate, and I’m socially ignorant—just ask Jack (Estes). But I’m learning/teachable :-)

Maybe I should hold off and celebrate #125? Then 150, 175 and 200 and then retire. I’ll still be young in Heart and Mind and Soul. Never grow old, as then you die!

I’m having a great experience, constantly learning more about the starry night, met some great and brilliant folks, and extremely proud of my accomplishments thus far. Expand your Mind, Explore the Universe.
THE CLOSEST NEW STARS TO EARTH
By Ethan Siegel

When you think about the newest stars forming in the Milky Way, you probably think of the giant star-forming regions like the Orion Nebula, containing thousands of new stars with light so bright it's visible to the naked eye. At over 400 parsecs (1,300 light years) distant, it's one of the most spectacular sights in the night sky, and the vast majority of the light from galaxies originates from nebulae like this one. But its great luminosity and relative proximity makes it easy to overlook the fact that there are a slew of much closer star-forming regions than the Orion Nebula; they're just much, much fainter.

If you get a collapsing molecular cloud many hundreds of thousands (or more) times the mass of our sun, you'll get a nebula like Orion. But if your cloud is only a few thousand times the sun's mass, it's going to be much fainter. In most instances, the clumps of matter within will grow slowly, the neutral matter will block more light than it reflects or emits, and only a tiny fraction of the stars that form—the most massive, brightest ones—will be visible at all. Between just 400 and 500 light years away are the closest such regions to Earth: the molecular clouds in the constellations of Chamaeleon and Corona Australis. Along with the Lupus molecular clouds (about 600 light years distant), these dark, light-blocking patches are virtually unknown to most sky watchers in the northern hemisphere, as they're all southern hemisphere objects.

In visible light, these clouds appear predominantly as dark patches, obscuring and reddening the light of background stars. In the infrared, though, the gas glows brilliantly as it forms new stars inside. Combined near-infrared and visible light observations, such as those taken by the Hubble Space Telescope, can reveal the structure of the clouds as well as the young stars inside. In the Chamaeleon cloud, for example, there are between 200 and 300 new stars, including over 100 X-ray sources (between the Chamaeleon I and II clouds), approximately 50 T-Tauri stars and just a couple of massive, B-class stars. There's a third dark, molecular cloud (Chamaeleon III) that has not yet formed any stars at all.

While the majority of new stars form in large molecular clouds, the closest new stars form in much smaller, more abundant ones. As we reach out to the most distant quasars and galaxies in the universe, remember that there are still star-forming mysteries to be solved right here in our own backyard.

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

What’s the big deal about gravitational waves?
By Akarsh Simha

What happened?
On February 11th 2016, scientists from the LIGO (Laser Interferometer Gravitational-Wave Observatory) collaboration announced the first direct detection of gravitational waves ever.

What are gravitational waves?
“Gravitational waves” (not to be confused with “gravity waves”) are waves predicted to exist in the framework of Einstein's theory of general relativity.

Newton’s theory of gravity, which predicts the motions of planets and celestial bodies extremely well, is only valid approximately. For it fails to obey what seems to be a fundamental physical law – that no information can travel faster than the speed of light in vacuum. Newton's gravity has no concept of propagating information carrying the news of gravitational changes – instead, the change is communicated instantly.

Einstein's general relativity is a radically different way of thinking about gravity. Of the four fundamental interactions in nature, there's something special about gravity: as far as we can tell, it acts on every piece of matter in the same way – all objects fall to the ground with the same acceleration. A stronger form of this observation is the “equivalence principle” that forms the basis of general relativity, which ascribes gravity to the curvature of space-time. General relativity is consistent with the notion that information cannot propagate faster than the speed of light in vacuum. Thus, according to relativity, the gravitational “ripple” associated with the change in configuration of matter propagates at speed of light through waves that we now called “gravitational waves.”

These “gravitational waves,” often described as “ripples in space-time,” are fluctuations in the distance between any two points in space-time. For simplicity, we can think of them as fluctuations in the distance between two points in space alone that fluctuate as time flows.

What is LIGO?
LIGO is America’s gravitational wave observatory. The observatory has two detectors – one at the Hanford DOE site in Washington, and the other at Livingston, LA. Each detector consists of a conceptually very simple instrument – a Michelson interferometer – but with a kind of precision that required 21st-century technology to achieve. The interferometer has two arms that are each 4 km long. A laser bounces from mirrors at the end of each arm, and the light from the two arms is combined and detected. The detectors are designed to detect an extremely small (~1/100 the size of an atomic nucleus) fluctuation in this 4 km distance, through interferometry. LIGO uses many state-of-the-art technological tricks to achieve this precision, which were necessary for the measurement.

What did LIGO see?
LIGO’s detectors detected a signal (a fluctuation in the length of the arms) that was characteristic of what general relativity would predict for a merger between two black holes – the oscillations in the signal get more and more frequent as the black-holes merge (the technical term is “chirped” because a chrip has such a characteristic). Because both detectors at opposite ends of the U.S. detected the same signal roughly at the same time, the scientists knew that it was not a local event like a truck passing by, etc. By noting that the Hanford detector detected the same signal 7 milliseconds after...

*“Gravity waves” are waves on the surface of a fluid that are caused due to gravity pulling back on the fluid surface – not much more complicated than ripples on a pond.
Gravitational Waves (continued)

the Livingston detector, they were able to roughly locate the source of this event in the sky – it came from the south somewhere in the vicinity of the Magellanic clouds. And from the strength of the signal, they were able to estimate the distance to the merger as 1 billion ly (roughly as distant as the Corona Borealis cluster ACO 2065 that many of us love and fear at the same time).

Although these signals were detected on 14th September 2015, the scientists of the global collaboration spent the many months between the detection and the announcement analyzing the signal and ruling out possible sources of noise and error. Two members of the LIGO collaboration apparently have the ability to inject spurious signals into the data, so as to verify that analysis is done without bias. The collaboration even had to ensure that this facility was not abused by a third-party prankster, or by someone breaking into their computer systems!

But according to many scientists, one signal, from one collaboration, doesn’t guarantee the certainty that science would need. Of course, one would need to see how repeatable such signals are. Hopefully, this is the first of many, which would increase our confidence in the ability of LIGO to detect these gravitational waves.

Is this the first evidence of gravitational waves?
This is the first direct evidence of gravitational waves. However, there has been indirect evidence of gravitational waves for many years now – the orbits of the Hulse-Taylor binary pulsar (PSR B1913+16) have been observed to contract at a rate that is consistent with the loss of energy through gravitational waves. This observation won Russell Hulse and Joseph Taylor Jr. the 1993 Nobel prize in physics “for the discovery of a new type of pulsar, a discovery that has opened up new possibilities for the study of gravitation.”

Is this a big deal for fundamental physics?
Not really. Einstein’s theory of general relativity has been verified reliably in multiple other contexts, so this observation is completely unsurprising.

Why is this event important for astronomy?
Of the four known fundamental interactions in nature – gravity, electromagnetism, strong interaction and weak interaction – only the first two are long range. Astronomy relies on long-range interactions to probe the distant universe. So far, astronomers have only been able to use the electromagnetic spectrum – all the way from radio to gamma rays.

Gravitational interactions are much weaker than electromagnetic interactions. This is why the “news” of astronomical events brought to us through gravitational waves has eluded discovery for almost a century after their prediction.

This detection opens a window into a new kind of astronomy – that of gravitational astronomy – where we are able to make use of gravitational signals from distant events. Thus, this detection is really the first of a kind. It would be wonderful to see gravitational observatories becoming commonplace, for we have no idea what we might “see”!

“You may hide in the shadows (from light), but you cannot hide from gravity!”

References and Acknowledgements
The LIGO press conference may be watched here: https://www.youtube.com/watch?v=aIPwEhMzYEl&t=1620

The author is not an expert on gravitational waves, although he has taken a course or two on relativity – so most of this information came from the press conference and discussion with colleagues. The author wishes to acknowledge his colleague Siva Swaminathan for important contributions to this article and the tongue-in-cheek quote at the very end!
**Joining AAS or Renewing Membership**

To join or renew your membership to AAS, please visit: http://www.austinstro.org/JoinAAS

AAS memberships run from 9/1 to 8/31 and there are five membership levels to choose from:

**Household** $40.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For members of a household living at the same address.

**Junior** $15.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For members up to age 18.

**Students** $15.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For members age 18 and older.

**Regular** $25.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For individual members.

**Seniors** $15.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For members 65 years of age or older.

---

**The Society’s Officers for June 2015 through May 2016**

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>David Mathias</td>
<td><a href="mailto:dmathias@mygrande.net">dmathias@mygrande.net</a></td>
</tr>
<tr>
<td>Vice-President</td>
<td>Terry Phillips</td>
<td><a href="mailto:terjo@TaoSETI.com">terjo@TaoSETI.com</a></td>
</tr>
<tr>
<td>Secretary</td>
<td>Ron Carman</td>
<td><a href="mailto:rrcarman@centurytel.com">rrcarman@centurytel.com</a></td>
</tr>
<tr>
<td>Treasurer</td>
<td>Tara Krzywonski</td>
<td><a href="mailto:fafb1@yahoo.com">fafb1@yahoo.com</a></td>
</tr>
<tr>
<td>Communications Chair</td>
<td>Joi Chevalier</td>
<td><a href="mailto:kitjer@snikte.net">kitjer@snikte.net</a></td>
</tr>
<tr>
<td>Outreach Chair</td>
<td>Dawn Davies</td>
<td><a href="mailto:dawnmunroedavies@gmail.com">dawnmunroedavies@gmail.com</a></td>
</tr>
<tr>
<td>Equipment Chair</td>
<td>Domingo Rochin</td>
<td><a href="mailto:sonicwaverochin@outlook.com">sonicwaverochin@outlook.com</a></td>
</tr>
<tr>
<td>Member Services Chair</td>
<td>Jim Spigelmire</td>
<td><a href="mailto:jspigelmine@ymail.com">jspigelmine@ymail.com</a></td>
</tr>
<tr>
<td>Member-at-Large</td>
<td>Alan Carruth</td>
<td>alan-quasar@snkmail</td>
</tr>
<tr>
<td>Member-at-Large</td>
<td>Carl Lindemann</td>
<td><a href="mailto:carl@cyberscene.com">carl@cyberscene.com</a></td>
</tr>
<tr>
<td>Member-at-Large</td>
<td>Brian Lippincott</td>
<td><a href="mailto:brlippincott@yahoo.com">brlippincott@yahoo.com</a></td>
</tr>
</tbody>
</table>

**Appointed positions**

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historians</td>
<td>Brian Cuthbertson</td>
<td><a href="mailto:b_cuthbertson@yahoo.com">b_cuthbertson@yahoo.com</a></td>
</tr>
<tr>
<td>Parliamentary</td>
<td>Kelley Knight</td>
<td><a href="mailto:kelleyknight@yahoo.com">kelleyknight@yahoo.com</a></td>
</tr>
<tr>
<td>ALCor (Astronomical League)</td>
<td>Jim Chandler</td>
<td><a href="mailto:jimchandler@isp.com">jimchandler@isp.com</a></td>
</tr>
<tr>
<td>IDA Rep (Dark Skies)</td>
<td>Lauren Gonzalez</td>
<td><a href="mailto:lsrogers16@gmail.com">lsrogers16@gmail.com</a></td>
</tr>
<tr>
<td>Newsletter Editor</td>
<td>Tim Brown</td>
<td><a href="mailto:tbrown@timobrown.com">tbrown@timobrown.com</a></td>
</tr>
<tr>
<td>Webmaster</td>
<td>Joyce Lynch</td>
<td><a href="mailto:joycedelynch@gmail.com">joycedelynch@gmail.com</a></td>
</tr>
</tbody>
</table>

---

**Monthly deadline for Sidereal Times submissions is the 1st of the month of publication. Please send submissions to joycedelynch@gmail.com**