



SearchLites

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The Quarterly Newsletter of The SETI League, Inc.

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Galaxies Colliding by Dan Duda

Good Grief! Think of all the mass; the power; the velocity. When our Milky Way collides with the Andromeda Galaxy, calling it a cosmic event just doesn't do it justice. Our Milky Way has 100 thousand million stars, our Sun being just one. Andromeda has over a trillion. And, these behemoths are racing toward each other like WWF wrestlers with fire in their eyes. But don't get the bomb shelters ready just yet – it isn't scheduled to occur for another 25 million years.

Interestingly, the Andromeda occupies a visual area in our sky larger than the Moon. But, we can't see it with our naked eyes, because at the current distance and the spread of its stars, not enough light is reaching us yet. However, we can see several of its stars, including (Alpheratz) Alpha Andromedae, which is a binary and part of the Pegasus constellation.

Now maybe back to the call for bomb shelters. Cosmologists are learning more about the universe every day. And one of the more recent ideas is that there is more to galaxies than previously thought. More specifically, invisible matter seems to expand the radii significantly further than our classic measurements have told us. OK, wait for it. That means the collision may already be occurring!

Don't worry, the need for bomb shelters still isn't called for. It will take about 25 million years for us to see any effect of the merger. And even at the peak of the collision, any danger will be at a minimum for at least two major reasons:

- The large distance between the stars in both galaxies makes stellar collision extremely unlikely
- In 25 million years none of us will be here to see the spectacular show (or be injured by any unlikely impact.)

What may happen as the pileup progresses is an ejection of our solar system into the void. That wouldn't necessarily disrupt Earth's orbit around the Sun. And the emerging view of the chaos we would be leaving would likely be breathtaking (too bad we won't be there to see it.)

When you're wondering what happens when two galaxies collide, try not to think of objects smashing into each other or violent crashes. Instead, as galaxies collide, new stars are formed as gasses combine, both galaxies lose their shape, and the two galaxies create a new supergalaxy that is elliptical.

It's also interesting to note that collisions are not new to the Milky Way. Not only have we consumed several smaller galaxies, but that process is occurring right now. For example, the Sagittarius Dwarf Spherical Galaxy is joining our party. A stream of its stars is leading the way. The small and large Magellanic Clouds are also patiently waiting their turn.

A quote by Carl Sagan seems appropriate here. "The near side of a galaxy is tens of thousands of light years closer to us than the far side; thus, we see the front as it was tens of thousands of years before the back."

And, in the words of Neil deGrasse Tyson "We are part of this universe: we are in this universe, but perhaps more important than both of those facts, is that the universe is in us." And of course, the Milky Way is in the universe.

Guest Editorial:

**Special Projects Report
by Scott Carter, VE3CGN**

There simply has never been a better time to participate in SETI. Recent advancements in computer and radio technology, the discovery of new exoplanets and of course the SETI League community make it an exciting time to be involved! If I haven't had the pleasure of speaking with you yet, my name is Scott Carter, VE3CGN. I have been operating a Project Argus station in Canada for five years now, and am pleased to have recently accepted the position of Special Projects Coordinator for SETI League.

During the third grade, I read a book about a boy who built a flashlight for his sister who was trapped in a dark closet. He built it from a light bulb and batteries taped to a ruler. I can't remember the name of the book, but I was hooked on electronics after reading it, and I set out to build my own flashlight. Once I got to high school, I landed a job fixing citizens band radios and car audio equipment. However, computers caught my eye, and I eventually got involved professionally in the computer industry.

I have been an amateur radio operator for over 30 years, so I have a background in radio. Since I grew up in the space shuttle era, I was also interested in space early in life. Although I did run SETI@Home for several years, SETI really grabbed my attention more recently when I was researching Project Argus on the SETI League web site. That is when I decided to build my own station. I really enjoy helping others by making my radio telescope remotely accessible to those who are unable to have one of their own.

My radio telescope is under construction most of the time, as I am continuously working on improvements. It is a three metre (ten foot) hydrogen-line telescope with a choke and cylindrical feed. It feeds a Low-Noise-Amplifier, 1420 MHz bandpass filter and LMR-400 coaxial cable. The dish uses a SpectraCyber radio telescope back-end and a custom SETI software package written in Java. Dish control is managed using Arduino boards and a Raspberry Pi, which are accessible via fiber optic cable between the dish and the receiver room. The dish has an actuator arm for elevation, and is undergoing modifications to add azimuth control and full tracking capability.

I am very excited about bringing some new ideas to the table at SETI League, including the introduction of a new project, Project Locus. This project will be a targeted SETI search of nearby stars that have known exoplanets similar to Earth. Keep an eye on this space for details as we roll out the project in 2022. In order to better coordinate our search projects, I kindly ask that you send me a quick email ex-

pressing your desire to participate in Project Locus or with your continued support for Project Argus, so that I can update our database. I can be reached at search@setidata.ca, and I look forward to hearing from you.

What is your favorite software package for SETI use? Do you have specific frequency bands you prefer to monitor? Do you have questions about building a station? Project Argus and Project Locus station operators are encouraged to join the "SETI Station Builders" Facebook group. This group is intended to help new SETI station operators get started, and for members to share experiences with different hardware and software platforms. We would like to grow our active SETI League on-line community, and we can only do so with your participation. I look forward to exchanging ideas with you in the new group, and learning what type of gear everyone is using for their stations.

To move our search projects forward, I would also like to start up the Software Committee again so that we can work on developing SETI League's next generation of search software. While we encourage you to use whatever software you have available for searching, the project would benefit from a common search platform, especially with regards to reporting functionality. Please email me at search@setidata.ca if you are interested in participating in the Software Committee.

If you are a software developer and haven't heard of SETI on the Allen Telescope Array (SonATA) project, this is one project you might want to take a look at. The SETI open-source project is located at:

<https://github.com/setiQuest/SonATA>

and is something I am looking at myself. It will need to be adapted to work with SDR receivers, but it has real potential. This is one project that the Software Committee will be keeping an eye on as well.

We are interested in what SETI League members are doing, so please share with the group or send us an email. SETI League is your organization, and we would like to hear from you. Please send in your station updates and any comments or suggestions that you may have to search@setidata.ca, join us at [Facebook.com/setileague](https://www.facebook.com/setileague), and visit our website at <http://www.setileague.org> today!

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In the "Pick your own charitable organization" box, just type in "SETI League." Now, every time you shop Amazon, they will donate a half percent of your purchase price to SETI research!



SETI League members are encouraged to nominate SETI-relevant websites for our monthly SETI SuperStar Award. Nominating emails to our Awards Committee may be sent to:

Awards_at_setileague_dot_org.

Please be sure to indicate the URL of the candidate website you are nominating, and a brief explanation as to why you consider the site worthy of recognition.

Event Horizon

SearchLites readers are apprised of the following conferences and meetings at which SETI-related information will be us at info@setileague.org, to obtain further details. Members are also encouraged to send in information about upcoming events of which we may be unaware.

June 27 - 30, 2022: *Penn State SETI Symposium*, State College, PA.

July 16 - 24, 2022: *44th COSPAR Scientific Assembly*, Athens, Greece.

August 2 - 11, 2022: *31st International Astronomical Union General Assembly*, Busan, Republic of Korea.

September 1 - 5, 2022: *80th World Science Fiction Convention*, Chicago, IL.

September 18 - 22, 2022: *73rd International Astronautical Congress*, Paris, France.

August 23 - 29, 2023: *81st World Science Fiction Convention*, Chengdu, China.

September 25 - 29, 2023: *74th International Astronautical Congress*, Baku, Azerbaijan.

October 11 - 18, 2024: *75th International Astronautical Congress*, Milan, Italy.

Please note that the global COVID-19 pandemic has resulted in the cancellation or rescheduling of many planned scientific meetings and conferences. We recommend you check with the event sponsors for updates before making travel arrangements. ❖

Minutes of the 2022 SETI Virtual Membership Meeting **Conducted online on 24 April 2022**

- **Call to Order**

The 2022 Membership Meeting was called to order by Executive Director Emeritus H. Paul Shuch, virtually (via the Zoom platform) at 13:03 hours EDT.

- **Quorum Call**

Trustees and Officers present: A. Heather Wood, Richard Factor, H. Paul Shuch

Trustees and Officers absent: Martin Schreiber

Additional Members present: Muriel Hykes, Rob Lodder, Elisabeth Piotelat, Scott Carter, Priska Boteau, Fred Erskine, Claudio Maccone

Guests present: Bryn Bailey

A quorum is present.

- **Minutes of 2021 Annual Membership Meeting**

The Minutes of the 2021 Annual Meeting having been previously posted to The SETI League's World Wide Web site, a motion was passed to accept the minutes as submitted.

- **Treasurer's Report**

Developed jointly by Dr. Shuch and Secretary/Treasurer Heather Wood, covering the calendar year 2021 (as e-filed).

1. Revenues: Dues and Contributions, \$11,453; Interest Income \$0; Total \$11,453.
2. Expenses: Educational/Scientific Programs \$6,546; Management/General \$606; Fundraising \$1,750; Total \$8,902.
3. Revenues minus Expenses: \$2,551.
4. End of 2021, SETI League account balances equalled \$15,892. 2021 beginning net assets \$13,341.
5. 2022 Budget: Projected Revenues \$10,000; Program Expenses \$8,000; Management/General Expenses \$750; Fundraising Expenses \$1,750; Total Expenses \$10,500; Projected surplus (deficit) (\$500); Projected Ending Balance \$15,482.
6. This report was accepted by those attending virtually

- **Executive Director's Report**

During 2021, the Executive Director:

1. published four issues of *SearchLites*, the quarterly newsletter of The SETI League, Inc.
2. gave only 1 SETI public lecture due to the COVID-19 pandemic.
3. performed 52 weekly updates of The SETI League website
4. posted 28 photos, plus numerous links and comments, to The SETI League Facebook page

5. issued one press release
6. continued to serve as an Emeritus member of the International Academy of Astronautics SETI Committee
7. responded to about a dozen email and telephone inquiries from members and prospective members.

- **Committee Reports**

1. **Membership**

Ms. Wood reports that five new members joined The SETI League since our last Annual Membership Meeting, and we have 85 Members in Good Standing at the time of this meeting.

2. **OSETI Committee**

Mr. Factor met with an individual who is currently installing cameras on various rooftops, and volunteered his Sedona AZ residence as a location for one such installation. However, this will be delayed due to construction projects currently underway on that residence.

3. **Awards Committee**

Absent an Awards Committee Chair, no websites received the SETI SuperStar award during the year 2021. There were no Giordano Bruno Awards or Orville N. Greene Awards presented for contributions during 2021. Nominations from members for all awards will be solicited in an upcoming issue of *SearchLites*.

- **Old Business**

1. **Annual Report**

Annual financial updates have been posted to the Website, and published in *SearchLites*.

2. **Web Server**

Mr. Factor reports no difficulties or concerns.

3. **Interstellar Beacon**

The project was terminated in 2020, and upon dissolution of the Interstellar Beacon nonprofit corporation, its remaining assets were donated to The SETI League.

4. **Press List**

Ms. Wood reports that, lacking an email Press List, The SETI League website and Facebook page remain our only two means of disseminating press releases.

5. **Telecommunications**

SETI League headquarters remaining unstaffed, with volunteers all working from home, the telephone numbers assigned to the organization have been terminated, and the Post Office box discontinued. Ms. Wood continues to retrieve voicemail messages occasionally via cellphone. She reports that the vast majority are spam calls, and that the vast majority of emails received via setileague.org are similarly spam.

- **New Business**

1. **Election of Officers**

The following slate of officers was retained for an additional one-year term:

- President - Richard Factor, serving without compensation
- Secretary/Treasurer - A. Heather Wood
- Executive Director Emeritus - H. Paul Shuch, serving on a volunteer basis
- Registered Agent - Anthony Agnello

2. **Annual Budget**

The draft 2022 Budget was presented to the Board for consideration.

3. **Tax Return Filing**

The Secretary/Treasurer reports that she was successful in eFiling our 2021 organizational tax return using the electronic Form 990N postcard, and having it timely accepted by the IRS.

4. **Mid-Year Renewal Letter**

Due to the lack of services having been provided to members during the pandemic, all dues-paying members were informed in May 2021 that their 2022 renewal would be complimentary (although donations are still being gratefully accepted).

5. **New Jersey Charities Registration**

Ms. Wood has submitted our annual New Jersey Charities registration forms and fees, which have been accepted.

6. **Next Meeting**

Pending confirmation of the dates of other technical meetings, the next Annual Meeting is tentatively scheduled for Sunday 16 April 2023. The date has been verified as not in conflict with Easter or Passover. The meeting will once again be held virtually via Zoom, at 1300 hours EDT, to be followed immediately by the Board of Trustees meeting. The date and time will be announced to the membership via the website and newsletter.

- **Advisory Board**

The Executive Director Emeritus thanks the members of our Advisory Board for many years of service.

- **Good and Welfare**

The SETI League's Facebook page www.facebook.com/setileague has (as of this morning) attracted 1,495 "likes" (up 22 since last year), 1528 "follows" (up 22 from last year), numerous member posts, and considerable discussion among members.

- **Adjournment**

The 2022 SETI League Annual Meeting was adjourned by the Executive Director Emeritus

at 13:26 hours EDT on 24 April 2022. The required annual Board of Trustees Meeting followed immediately.

• **Board of Trustees actions**

- The Board of Trustees Meeting was called to order by the Executive Director Emeritus.
- The Board members present accepted all reports presented at the Annual Membership Meeting, and adopted the proposed 2022 Budget.
- **Personnel matters**
The Executive Director Emeritus reviewed with the Board of Trustees the previously adopted terms for cost-sharing of his health insurance premiums, as a program expense, which will continue at last year's percentage, pending availability of funds and subject to periodic review.
- The Meeting was adjourned at 13:30 hours EDT.
- Members and guests in attendance were invited to remain online to continue informal discussions on the Zoom platform, for a period of one hour following adjournment.

Respectfully submitted by Prof. H. Paul Shuch, Executive Director Emeritus

SETI League 2021 Financial Report

990 Line	REVENUES:	2021 (budget)	2021 (filed)
1d	Dues, Grants & Contributions	8,000	11,453
4	Interest & Investments	0	0
12	Total Revenues:	8,000	11,453
	EXPENSES:	2021 (budget)	2021 (filed)
13	Educ. and Scientific Programs	8,000	6,546
14	Management & General	750	606
15	Fundraising	1,750	1,750
17	Total Expenses:	10,500	8,902
18	Excess or (Deficit) for the year	(2,500)	2,551
	BALANCE SHEET:	2021 (budget)	2021 (filed)
19	Beginning Net Assets	13,341	13,341
21	Ending Net Assets	10,841	15,892

SETI League 2022 Budget

990 Line	REVENUES:	2022 (budget)	2022 (filed)
1d	Dues, Grants & Contributions	10,000	pending
4	Interest & Investments	0	pending
12	Total Revenues:	10,000	pending
	EXPENSES:	2022 (budget)	2022 (filed)
13	Educ. and Scientific Programs	8,000	pending
14	Management & General	750	pending
15	Fundraising	1,750	pending
17	Total Expenses:	10,500	pending
18	Excess or (Deficit) for the year	(500)	pending
	BALANCE SHEET:	2022 (budget)	2022 (pending)
19	Beginning Net Assets	15,982	pending
21	Ending Net Assets	15,482	pending



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Annual Renewal: Is This Your Last SearchLites?
SETI League memberships are issued for the *Calendar Year*. Please check the expiration date indicated on your mailing label. If it reads December 2021 or earlier, you have already expired, and *must* renew your SETI League membership **now!** Please fill out and return this page along with your payment.

Please renew my membership in this category:

Full Member	\$50 / yr
Supporting Member (elderly, retired, or disabled)	\$35 / yr
Scholarship Member (full-time students only)	\$25 / yr
Household Member (same address as a Full Member)	\$15 / yr
Household Life Member (same address as a Life Member)	\$300
Life Member (until we make contact)	\$1,000
Sustaining Life Member – a generous <i>annual</i> pledge of:	\$1,000 / yr
Patron (priority use of The SETI League’s radio telescope)	\$10,000
Director (Patron membership plus seat on advisory board)	\$100,000
Benefactor (a major radio telescope named for you)	\$1,000,000

Annual memberships are issued for the calendar year. Those processed in January through April expire on 31 December of that year. Those processed in September through December expire on 31 December of the *following* year. Those members joining in May through August should remit half the annual dues indicated, and will expire on 31 December of the same year.

Order Your Membership Premiums:

	(u)*	(o)*
Pocket protectors	\$ 3	\$ 4
Mouse pads	\$ 5	\$ 7
<i>Tune In The Universe! (CD-ROM)</i>	\$25	\$30
<i>Proceedings of SETICon01</i>	\$20	\$27
<i>Proceedings of SETICon02</i>	\$20	\$27
<i>Proceedings of SETICon03 (CD)</i>	\$15	\$18
<i>Proceedings of EuroSETI04 (CD)</i>	\$15	\$18
<i>Proceedings of SETICon04(CD)</i>	\$15	\$18
<i>SARA Conference Proceedings:</i>		
2006, 2007, 2008, 2009 (specify)	\$20	\$27
<i>SETI League Technical Manual (CD)</i>	\$10	\$13
<i>Project Cyclops 2nd Edition</i>	\$20	\$30
<i>The Listeners</i> by James Gunn	\$15	\$21
<i>Sing More Songs of SETI</i> (Songbook)	\$10	\$13
<i>Sing a Song of SETI</i> (music CD)	\$15	\$18
<i>Sing More Songs of SETI</i> (music CD)	\$15	\$18
T-shirts, specify M, L, or XL	\$15	\$22
SETI Nerd Gift Set (one each Mouse Pad, Pocket Protector, <i>Project Cyclops</i> and <i>Tech Manual</i>) at 20% Savings to <u>Members Only</u> :	\$30	\$45

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The SETI League invites you to pay your membership dues and additional contributions via credit card, using the PayPal online payment system. Simply log on to www.paypal.com and specify that your payment be directed to paypal@setileague.org.

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Ham call: _____ URL: _____

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