

First Light Lite (June Edition)

Jim Lynch – Editor

A Day After May 31st, 2026 (A Full Blue Moon)



Fig 1. Looks more white than blue... Hmmm.

Message from the CCAS President

After a frozen winter and a soggy spring, we finally squeezed in a late spring star party on May 12th. Following a brief talk in the WSO downstairs room, a crowd of about 25-30 people went outside to view the stars and planets through a variety of small smart-scopes and larger aperture Dobsonians (which are better for planets.) As the nights were (and still are) getting shorter, with sunset at 7:51 PM that night, real dark sky viewing wasn't available until about 9:00 PM.

Visitors to our late spring, summer, and early fall star parties should be aware of this extra hour needed for the sky to darken adequately. On the June 21st summer solstice, the Sun sets at 8:24 PM on Cape Cod, so viewing the summer sky in darkness must wait until 9:30 PM that day. This may be a bit late for young families, but the weather is warmer, and generally families only spend an hour or ninety minutes here.

Our June star party will be on June 9th and the public should arrive at 8:30 PM, at which time we will present a short introductory talk and tour of the Werner Schmidt Observatory, followed by outside observations. (Sunset is at 8:14, so observing won't be possible then – a bit past nine is when the sky condition becomes adequate.)

And, as you've seen in our previous FLL issues, we are also keeping busy with many other activities - equipment preparation, outreach, and our usual First Thursday lectures. If you are on Cape, one purely social event you might enjoy is our dinner before the First Thursday talks. Currently we are doing this at the Sea Dog restaurant in South Yarmouth, until the H&K extends back to evening hours. Check the end part of this newsletter for more information.

Outreach and Coming Events

As mentioned last month, we've had requests this spring for talks and star parties from nearly a dozen venues, schools, and organizations. We're doing our best to honor these requests, as education and outreach are two of our Society's core functions and we very much enjoy interacting with people about astronomy and STEM. If you are on the mailing list and are interested in helping us staff some of these events, please contact us via cca@capecodastronomy.org and we will provide you with further information. We *really* could use a few extra hands!

Let me share some examples of last month's outreach.

On May 4th (which was with us), we hosted members of Ms. Regina Woods' and Ms. Julie Christopher's 6th and 7th grade classes at Dennis-Yarmouth's Intermediate School. After an introductory talk (peppered by a lot of good questions!), we went outside for some observation time. Due to having to leave early, the session wasn't quite as long as all would have wished, but the students did get to see a gibbous phase Venus, Jupiter and its Galilean moons, and the globular cluster M13. The teachers and students enjoyed the visit and left with a promise to return next year!

Another event, which is annual in spring at the historical old Cataumet Schoolhouse, is the three week "Science at the Schoolhouse" program, which features one week each of electricity and magnetism, optics, and astronomy. CCAS member Marinna Martini was there to help the program's organizers with the astronomy day portion. This program is tailored for grammar school students, but it doesn't shy away from teaching the students basic concepts of advanced topics like general relativity and stellar structure! Just below is a picture of the "traditional" bowling ball-in-a blanket distortion of space by mass and below that is a "lollipop" Hertzsprung-Russell diagram (with questions on the other sides of the stars). The young astronomers loved these simple representations. And none of us (students or teachers) could answer *all* of the questions!



Fig 2. The planets have unfortunately all spiraled into the Sun in this demonstration.



Fig 3. Lollipop representation of the H-R Diagram. Star names on front, questions on the back!

If it seems that a lot of the outreach last month was aimed towards grammar school students, yes, it was – and it's time very well spent by our club. Providing

memorable experiences and imparting enthusiasm about science to young students increases the odds that they will be more interested in science as adults and perhaps even go into STEM fields as adults. Probably most won't, but a population having an interest in science and a favorable outlook on it is also a big societal benefit. We often forget that when talking about STEM. We're not just looking for new practitioners!

Astrophotography

RECAP FROM LAST MONTH: An opportunity to learn astrophotography “from the ground up” will be offered to all by CCAS later this year and is currently in the organizational stage. Peter Pilon and other CCAS members have formed an astrophotography group that will focus on using the new, inexpensive smart scopes as well as our dome telescope at the Werner Schmidt Observatory. He and other experienced members are planning to offer a course on that for members and friends after doing the organizational work. More details will be forthcoming in the near future, but if you're interested in astrophotography, please contact our Cape Cod Astronomy email [cca@capecodastronomy.org] and let us know.

AN UPDATE: The astrophotography special interest group will be giving the July 9th “First Thursday” talk, at which they will give the latest details of their work, including a Dropbox facility where photos can be stored and shared. If you're interested in photography, don't miss that talk! (See below.)

“CCAS' Future” Workshop

UPDATED: Two years ago, after Covid had abated and we were able to meet in person again, we held a mini-workshop dinner at Bobby Byrne's Pub in Hyannis where we discussed future directions for CCAS. This was moderately successful, but we didn't accomplish quite as much as we hoped.

This year, we will repeat the process, tentatively in August at WSO. We would like to ask all you who are reading this for inputs about how we can improve our club's science and education programs, increase our membership, advertise better, have better structured committees, and any other aspects that you can think of. Please send your input to cca@capecodastronomy.org . If you are coming to the Sea Dog dinner this Thursday before Dr. Bell's talk, please consider bringing some input there as well.

Elections in Mid-June

Each year in June, we elect a full slate of CCAS officers for one-year terms and one CCAF Board member for a five year term. As Janice Marks and I are both standing down as Board members after five years of work each (the schedule adjustment being due to a former member moving), we will need two new CCAF Board members this year. We welcome all nominations for these positions up until our Third Wednesday meeting in mid-June.

As of this writing, we have one person standing for each CCAS officer position, and one person standing for a CCAF Board position. If someone is interested in the second Board position, please contact Jim Lynch at jlynchwhoi@gmail.com or our club email cca@capecodastronomy.org.

We also need a CCAF Treasurer, who need not be a Board member, and we are also strongly considering getting an accountant's help with this position.

On a personal note, I would like to see some new people interested in these positions. They are part of sharing the responsibility as well as the fun of being in a club and to be honest, they are not horribly onerous.

Dues Increase to original level (repeated from last month)

When Covid struck, our club activity level dwindled to a minimum, with only Zoom lectures and an occasional view of the sky via Zoom (TYVM George Silvis). That being the case, we reduced our dues to reflect the situation.

However, recently our in-person activities have resumed their former level, or nearly so. This means we have more in-person interactions with both speakers and the public via club events, and thus more expenses in those directions. As club activities (but not equipment) are supported by CCAS' dues, we feel that at this point we need to increase dues so that we can cover the increase in activity. The dues for 2026-2027, due July 1st, will be \$30. This is still voluntary, and we don't restrict activities if you can't pay. But this modest amount keeps our activities viable, and we hope you can help us keep CCAS thriving, as it has become again.

Last Month's Speaker

Speaker: Dr. Jim Lynch, WHOI and CCAS

Place: Both at the DYHS library and on Zoom

Topic: Cosmology: History since 1899

Abstract: In the very early 20th century, both quantum theory and relativity appeared, which entirely changed both physics and cosmology. Both the theoretical and experimental advances of the 20th century and the first quarter of this century will be considered in chronological order. Our view of the universe then and now is entirely different. As an old commercial stated: We've come a *long* way, baby! But, there's still a ways to go...

Biography: Jim Lynch is current President of CCAS, a Senior Scientist Emeritus at Woods Hole Oceanographic Institution, and Editor in Chief of the Acoustical Society of America Publications.

Precis: Between Newton's classical mechanics (and its more elegant successors) and the Maxwell Equations' brilliant encapsulation of electricity and magnetism, many scientists in the late 19th century considered physics and astronomy to be nearly complete areas of study, with only a few minor mysteries to clear up. Two of those mysteries were blackbody radiation and the Lorentz contraction. But these were not mere annoyances, and Planck and Einstein ushered in quantum mechanics and relativity in solving them. The view of the universe drastically changed.

In astronomy and cosmology, an assortment of observational players in the early 20th century (Hubble being the best known to the public) changed our view of cosmology from being one where the Milky Way was the entire universe to it being one galaxy in a host of galaxies which were mysteriously moving away from each other.

In theory, Einstein and the intrepid souls who solved his field equations and simplified them for cosmology ruled the roost, with the Big Bang and the Einstein/deSitter universe model dominating even up to the late 1990's. And even after the discovery of dark matter and dark energy, the Einstein field equations, with the addition of inflation, dark matter, and a cosmological constant term, were (and are) the state of the art. The so-called Λ CDM model (the cosmological constant Λ plus "cold dark matter") is still what is used, and fits data to within a percent. So, as in the late 18th century, we seem to have things "mostly under control." One percent is pretty good, isn't it.

BUT, we still don't know what dark matter and dark energy are. We see their effects, but we've yet to bottle a container of either. They constitute an estimated 95% of the matter/energy in the universe, so maybe we're not so close as we think. And there are more subtle issues. Things called "the Hubble tension" and the

development of structures in the early universe, which have been dredged up experimentally by improved satellite observations, are disrupting current theory.

And then there is the “little” annoyance that relativity and quantum mechanics don’t agree at the Planck scale (the most basic scale of physics). This scale might very well hold the key to the origin of the universe and its structure. It is rather ironic that the two greatest advances of the early 20th century should be, in combination, the main enigmas of the 21st century. So, there is more history to write, and the universe that will emerge when that is written will undoubtedly look as strange to us as the Einsteinian one did to the people of the early 20th century. Stay tuned!

This month’s speaker:

Speaker: Dr. Keaton Bell, CUNY NY

Topic: White Dwarf Asteroseismology

Date: June 2nd, 7:30 PM

Place: Both at the DYHS library and on Zoom (speaker will be remote)

BIO: Assistant Professor Keaton Bell is an observational astronomer who studies the structures of white dwarf stars from their vibrations. Dr. Bell earned his PhD at the University of Texas at Austin, where he observed for over 200 nights on the 2.1-meter telescope at McDonald Observatory, and now he mostly works with video data of the entire sky collected by NASA’s Transiting Exoplanet Survey Satellite (TESS). Dr. Bell worked as a postdoc at the Max Planck Institute for Solar System Research in Göttingen, Germany, and was an NSF Astronomy and Astrophysics Postdoctoral Fellow at the University of Washington before joining the faculty of the Queens College Physics Department of the City University of New York (CUNY) in 2022.

Abstract: Queens College astronomer Keaton Bell uses video recordings from space telescopes to measure vibrations of dead stars called white dwarfs. White dwarf stars are the glowing hot embers left over when most stars run out of nuclear fuel. Some white dwarfs vibrate spontaneously, revealing resonant frequencies of the stars that can be used to map their interior structures. This presentation will describe the physics of stellar vibrations by analogy with the physics of musical instruments, which Keaton teaches a course on at Queens College. We will discuss the importance of studying white dwarf stars and review how the QC White Dwarf

Research Group studies their structures by interpreting video recordings of vibrating white dwarfs. This talk will explain some of the newest breakthroughs in the field of white dwarf asteroseismology.

Note: If anyone is interested in a “popular science” book on how helioseismology and asteroseismology work, along with some interesting history, you might look into “Sunquakes: Probing the interior of the Sun” by J.B. Zirker.

July 9th Speaker: (delayed one week due to holiday)

Authors - This event was organized and will be presented by the members of the CCAS Astrophotography Special Interest Group. The members are: Brian Twohig, Bruce Korf, Charlie Burke, Frank Isik, Gary Walker, Gerry Grenier, Hank Ricci, Jim Lynch, Marinna Martini, Mary Lou Ricci and Peter Pilon

Date: July 9th, 7:30 PM

Place: Both at the DYHS library and on Zoom (speakers will be live)

Title - "An Introduction to, and Workshop on, Smart Telescopes"

Abstract - Smart Telescopes are an exciting disruptive segment in the area of astrophotography bringing real imaging of solar system and deep sky objects to a new level of simplicity and affordability. This lecture and group activity will present the basic features and operation of smart telescopes. The first part of the evening will be a short presentation to introduce smart telescopes and answer the questions of what they are, how they work and what they can do. The second part of the evening will be a workshop showing attendees actual smart telescope models and how they operate. Simple operation instructions for some of the popular models of smart telescope will be available for interested participants.

August 6th Speaker: Dr. Antony Stark, HSCfA

Topic: “The tensor-scalar relation at the start of the Big Bang.”

Directions to Dennis Yarmouth HS and Werner Schmidt Observatory

For information on the location of our Dome behind Dennis-Yarmouth High School, click on the purple button "Old Website" and once there, click on "Meeting

Location" viewing the two maps that are there: external for the Dome, and internal to locate the high school library where meetings are held.

For meetings, drive along the south entrance road and go around behind the main building. Park in the lot about halfway down the building and go in the back door and turn down the hall to your left to find the library.

For Star Parties at the Dome, drive in the north entrance road all the way past the north side of the main high school building, through a gate, and on to park near our Dome. You can (and should) park on the grass there.

Sea Dog restaurant directions (No longer H&K, which recently closed)

CCAS hosts a dinner gathering for the speaker (if available), members and friends on meeting nights (just before the meeting) at the Sea Dog restaurant at 5:30 - 5:45pm; (the meetings begin at 7:30 at D-Y.) Please join the group to dine and talk about all things interesting, especially astronomy, before our meeting. The Sea Dog restaurant is located at 23 White's Path in South Yarmouth. Its phone is 508-694-6020. Chris Lynch has called ahead to confirm this new venue (as the H&K no longer has evening dining.)

NOTE: Since Covid, we have a mix of fully remote and hybrid in-person+ remote meetings. Check the newsletter and/or website to see what the format is each month! Sometimes there are no dinners when the meeting is fully remote.