First Light Lite

July 9th, 2025

Jim Lynch – Editor

Events – June

June was a good month for CCAS, with both an excellent speaker, James Dottin III from Brown (see précis coming separately), and a good star party. Sadly, I missed the star party due to travel, but Observatory Director Charlie Burke reported that it went very well. I personally will report that Scotland is still quite beautiful and interesting, so if I had to miss a star party, I had a good excuse! We also did not have a Third Tuesday WSO workday in June, as I wasn't the only one traveling, or with visitors, or otherwise occupied. We are a busy group!

But Charlie Burke and a few other club members did work in June and July on automating the dome to slew with the telescope and have had some great initial success. There are still a few minor issues being resolved, but the light at the end of the tunnel seems to be benign. By Charlie's estimate we are close to being fully remotely operational from the warm room downstairs, as opposed to working things by hand in the dome upstairs. Many thanks to Charlie and his team for all their efforts!

Events – July

July has been a quiet month so far, though not completely. We did not have a First Thursday speaker due to Thursday being the day before July 4th. However, our invited July speaker, the well-known Dr. Abraham (Avi) Loeb from Harvard, postponed to August, so August will feature two excellent speakers, the other being an old friend of the club, Dr. Antony (Tony) Stark from the Harvard Smithsonian Center for Astrophysics. So, put the dates aside on your calendar for these! (See below for details.) As an aside, I think we need to move our First Thursday talks in July and January further into those months - we routinely cancel those months' talks and we really don't need to!

The usual events for July that are upcoming are: 1) the Third Tuesday WSO workday on the 15th, 2) the Third Wednesday Zoom meeting on the 16th (including elections, as will be discussed below), and 3) the New Moon star party window week, from July 21st to July 25th.

Elections

Our elections are usually held in July, and this year is no different. We will hold them at our Zoom meeting on the 16th, with either email vote or Zoom vote being accepted. Email votes should be sent to cca@capecodastronomy.org . Zoom invitations will be sent out just prior to the meeting.

The current CCAS officers have all volunteered to stand again for office, specifically: Jim Lynch, President; Frank Isik, Vice-President; Chris Lynch, Secretary; and Ken Brink, Treasurer. If anyone else would like to add a candidate to this list, please just send an email to cca@capecodastronomy.org .

The CCAF Board has one member rotating off, namely the Secretary Jonathan Hatch, who does not wish to run again due to travel and personal plans. So, we need someone to fill this position. It is not an arduous one but does need someone who is able to attend our Third Wednesday meetings on a regular basis. Again, anyone interested can email cca@capecodastronomy.org .

Dues

Our CCAS dues policy has been rather flexible since Covid, for obvious reasons. However, since our activities have stabilized recently, a more consistent policy should be implemented.

After some discussion, we've come to the agreement that our dues should be light and voluntary unless you want to use/borrow equipment owned by the club. Dues this year (due the end of July) are $15 per member or family of members, and free for students. This small amount is used solely for club activities, and not for equipment, which is CCAF's province. We appreciate the contributions from people who enjoy our activities, but as our expenditure is generally small, we don't insist on dues to enjoy them.

Dues can be paid at our "in person" DYHS meetings or via mail to: Dr. Ken Brink, 16 Greengate Road, Falmouth, MA 02540. Please do not send them to the DYHS or to the Observatory, as this can delay receipt substantially.

Projects and Outreach

I have a list of interesting projects for club members that I'd like to discuss at our July 16th meeting, which augments our previous discussions. I also have a list of requests for public outreach which we need to find volunteers for. So, please make the meeting on the 16th if at all possible!

Apologies and Promise to our May and June Speakers

Due to a variety of factors, I'm way behind on my "precis discussions" of the talks by the previous two CCAS speakers, Dr. Sarah Elizabeth McCandless of NASA and Dr. James Dottin III of Brown University. I've drafted some nice writeups, but as they are long, let me promise to send them in a separate email in the next few days! Including them here would make this newsletter unbearably long and also not do them justice. So again, my apologies and a promise to all to provide these soon! They were great talks and my thanks and the clubs for their time and effort in giving them!

Upcoming Speakers

August 7th – Dr. Tony Stark, HSCfA. (An old friend of CCAS)

Venue: DYHS and on Zoom

Bio: Antony Stark is a pioneer of Antarctic Astronomy and is a founder and designer of the South Pole Telelescope (SPT), which is among the most important instruments for observational cosmology. He is PI and designer of the Parallel Imager for Southern Cosmology Observations (PISCO), a photometric camera on the Magellan Clay telescope for taking fast simultaneous g, r, i, and z band images. PISCO is being used to take the first images of galaxy clusters discovered by the SPT to determine their mass by gravitational lensing analysis. PISCO is also in use by several groups from Magellan consortium institutions to study asteroids, galaxy formation, exoplanets, and X-ray sources. Stark is a member of the STO and GUSTO balloon-borne telescope teams for Milky Way and Magellanic Cloud TeraHertz spectroscopy surveys of the dominant cooling lines of the interstellar medium.

As a personal note, this is Tony's fifth talk to our club. He comes down to the Cape each summer, and CCAS is one of his regular stops when here. He has been our "Current Astronomy 101" teacher, and I hope that people can join him and his wife Ellen for dinner with us when he comes here! Thank you, Tony!

Topic: "The Shapes of Galaxies Past and Present"

Abstract: When we could only see nearby galaxies at low redshift, astronomers were concerned with understanding the shapes of galaxies as a result of the physical processes within them: ellipticals, spirals, and "irregulars". I'll discuss a project I did on this topic a half-century ago, at the suggestion of two great names:

Martin Schwarzscild and S. Chandrasekhar. New, powerful telescopes are now showing us the formation of galaxies back in time at high redshift --- they're very different, and there are aspects we don't understand, but are working on as active research.

July talk which was postponed to Aug 21st

Speaker: Dr. Avi Loeb, Harvard University

Venue: Zoom only

Bio: Abraham (Avi) Loeb is the *Frank B. Baird, Jr., Professor of Science* at Harvard University and a bestselling author (in lists of the New York Times, Wall Street Journal, Publishers Weekly, Die Zeit, Der Spiegel, L'Express and more). He received a PhD in Physics from the Hebrew University of Jerusalem in Israel at age 24 (1980-1986), led the first international project supported by the Strategic Defense Initiative (1983-1988), and was subsequently a long-term member of the Institute for Advanced Study at Princeton (1988-1993). Loeb has written 9 books, including most recently, *Extraterrestrial* and *Interstellar*, as well as over a thousand scientific papers (with h-index of 131 and i10-index of 614) on a wide range of topics, including black holes, the first stars, the search for extraterrestrial life and the future of the Universe. Loeb is the Director of the Institute for Theory and Computation (2007-present) within the Harvard-Smithsonian Center for Astrophysics, and also serves as the Head of the Galileo Project (2021-present). He had been the longest serving Chair of Harvard's Department of Astronomy (2011-2020) and the Founding Director of Harvard's Black Hole Initiative (2016-2021). He is an elected fellow of the American Academy of Arts & Sciences, the American Physical Society, and the International Academy of Astronautics. Loeb is a former member of the President's Council of Advisors on Science and Technology (PCAST) at the White House, a former chair of the Board on Physics and Astronomy of the National Academies (2018-2021) and a current member of the Advisory Board for "Einstein: Visualize the Impossible" of the Hebrew University. He chaired the Advisory Committee for the Breakthrough Starshot Initiative (2015-2024) and served as the Science Theory Director for all Initiatives of the Breakthrough Prize Foundation. Click here for Loeb's essays on innovation.

Title: The Search for Interstellar Objects of Technological Origin

Abstract: Over the past decade, the first four interstellar objects were discovered. They include the interstellar meteor, IM1, detected on January 8, 2014, `Oumuamua detected on October 19, 2017, and Borisov detected on August 29, 2019. Among these, the first two appeared anomalous relative to known solar-system rocks whereas the fourth appeared to be a familiar comet. IM1 exhibited the highest material strength among all meteorites in the CNEOS catalog of NASA, `Oumuamua exhibited a flat shape and non-gravitational acceleration with no detectable cometary evaporation. In June 2023 we recovered 850 spherules from the Pacific Ocean site IM1. A tenth of these submillimeter meteoritic spherules displayed a unique chemical composition, different from familiar solar system materials.Currently, new Galileo Project Observatories are monitoring millions of objects near Earth in the infrared, optical, radio and audio and analyzing their nature with machine-learning software. Are any of them Unidentified Anomalous Phenomena? Forthcoming data from the Rubin Observatory in Chile will offer additional clues on interstellar objects. Is space trash from extraterrestrial technological civilizations lurking among the natural interstellar rocks?

September 4th - Dr. Mario Motta.

Topic: Building and Using his 32" Telescope

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.

H&K directions

CCAS hosts a dinner gathering for the speaker (if available), members and friends on meeting nights (just before the meeting) at the South Yarmouth Hearth & Kettle

restaurant at 5:30 PM; (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 H&K is at 1196 Rt 28, South Yarmouth, about a half mile west of the Station Avenue/Main Street intersection with Rt 28 (stop light). **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! There are no dinners when the meeting is fully remote.