



STAR FIELDS

Newsletter of the
Amateur Telescope Makers of Boston
Including the Bond Astronomical Club
Established in 1934
In the Interest of Telescope Making & Using

Vol. 23, No. 10 November 2011

This Month's Meeting...

Thursday, November 10th, 2011 at 8:00 PM
Phillips Auditorium
Harvard-Smithsonian Center for Astrophysics
Parking at the CfA is allowed for the duration of
the meeting.

The Dark Energy Crisis and its impact on Fundamental Physics.

"The (Nobel Prize-winning!) discovery of the accelerating expansion of the Universe, driven by "dark energy," is an indication that our understanding of fundamental physics is incomplete. In particular, the dark energy mystery lies at the intersection of gravity and quantum mechanics where we have trouble knitting together a consistent theoretical picture. In some ways our current situation is similar to the circumstances before the advent of quantum mechanics, with experimental results that don't fit into our existing theoretical framework. I will present an overview of the Dark Energy crisis we face, and sketch out some scenarios that might lie in our future."

Our speaker is Christopher Stubbs, an experimental physicist working at the interface between particle physics, cosmology and gravitation. His interests include experimental tests of the foundations of gravitational physics, searches for dark matter, and observational cosmology. He was a member of the High-z Supernova Search, one of the two teams that discovered the accelerating expansion of the cosmos, and is currently engaged in a program to ascertain the equation of state of the Dark Energy. He is also a member of a collaboration that is using the Earth-Moon-Sun system to probe for novel gravitational effects that may result from physics beyond the Standard Model.

President's Message

Our club has a big string of star parties lined up in late October and early November- all in a period of a few weeks. Thanks to all of you who responded to help staff up these events!

Why do we put on star parties? There are lots of reasons. First, it is simply fun to talk with young folks who are so enthusiastic. And maybe the boy or girl you talk with will become more interested in science and math and decide to take become a scientist or engineer. Astronomy touches on such a broad range science topics that children are naturally attracted to it. And MIT, who is our clubhouse landlord, places a lot of value on our club's outreach efforts. MIT does outreach from its Haystack site, and appreciates the fact that we do the same at area schools.

If you are new to ATMOB and astronomy, and would like to participate in our star parties but are concerned that you don't yet know enough about astronomy, don't worry! You already know a lot more than the youngsters you'll be talking with. They aren't concerned about what you might not know- the youngsters simply appreciate your enthusiasm and are happy to learn what you do know. As a side benefit, you might be motivated to learn a bit more astronomy while getting ready for star parties. And you will certainly get to know fellow ATMOB members better while interacting with them at star parties. So, please think about giving it a try if you haven't yet.

The big news this month is that just a few days ago, ATMOB acquired a Starlab, which is an inflatable planetarium for teaching children about the heavens. The outreach program at the Kavli Institute for Space Science on campus has completed its contract, and the director of this effort thought first of our club as a possible recipient for its now-surplus Starlab. After consideration, our board decided to accept. Our star party coordinator, Virginia Renehan, will be responsible for scheduling of our new Starlab, and is putting together a plan for training members who would like to learn how to set up and use it. Please contact her at starparty@atmob.org if you would be interested in being trained to be a qualified user, or to discuss possible venues for its use.



Photo by Ross Barros-Smith

Interior of the portable Starlab planetarium donated to ATMOB

Education and outreach have long been an important part of our club activities, and now with our new Starlab, we have new opportunities to interest young people in astronomy. If you

haven't yet tried out the outreach/education activities of our club, please consider it. It's fun and satisfying!

Keep looking up,

~ Bernie Kosicki, President ~

Clubhouse Report

The October work party was held on Saturday Oct. 8. There were 12 members on hand to help with the observatory project and outdoor grounds work. Turnout was light for this work party due to the Holiday weekend.

John Blomquist hauled his tractor to the work session and spent the morning mowing the entire observing field and grounds surrounding the farmhouse and observatories. Several members helped in raking the pile of clippings and dumping them in the mulch pile. Tree trimming was not attempted since too few members were on hand to make this effort worthwhile.

The better part of the work party effort was spent on weatherizing the new C-14 observatory. Thanks to Paul Cicchetti and Dave Prowten for taking the lead on this project. The new observatory roof was laid down using exterior grade plywood. 1x6 pine board was used for roof trim.



Photo by Al Takeda

Dave Prowten gluing the rubber membrane to the Home Dome roof

John Small was busy placing electrical and data cable in the trench, which runs from the Ed Knight roll-off observatory to the new C-14 observatory. The trench was dug last spring during a previous work session.

Over the following two weekends a contingent of members were on hand to continue work on the observatory. The goal is to make the dome and housing structure weather tight before snowfall. John Small completed the installation of electrical service to the observatory by installing a new electrical panel on the North inside wall 5 feet from the floor. Conduit was laid in the trench for both electrical and data service. Dave Prowten and Paul Cicchetti installed a layer of 60mm rubber roofing, and they plan on wrapping a 6" rubber strip around the circumference of the dome over the next available weekend.

Mike Hill worked on modifying one of the wood piers in the observing field to accommodate an 8" f/8 Newtonian that he is planning on donating to the club. As of the weekend of October 22 Mike has successfully completed this project and the scope and modified mount showed beautiful views of Jupiter during an observing session.

The next work party is scheduled for Saturday, November 12. This session will be the last available opportunity to weatherize the observatory and install the snow fence.

We will publish a complete list of all members who have generously given their time for all clubhouse projects over the past two months in the next Star Fields.

Please join us on Saturday Nov. 12 for our next work party.

~ Clubhouse Committee Chairs ~

~ John Reed, Steve Clougherty and Dave Prowten ~

Clubhouse Saturday Schedule

November 5	Hopkinson & Small
November 12	Paquin & Prowten Work Party #11
November 19	Swedlow & Vallabha
November 26	Clougherty & Takeda
December 3	Jacobson & Sonowane
December 10	Cicchetti & McDonagh Work Party #12
December 17	Johansson & Reed
December 24	CLOSED – Christmas Eve
December 31	New Year's Eve Party

Thoreau on Astronomy

Last evening, the weather being cooler, there was an arch of northern lights in the north, with some redness. Thus our winter is heralded.

Journal, 5 November 1860

~ Submitted by Tom Calderwood ~

Mario's Astronomy Exploration of Europe

Hello all, here are some various astronomical potpourri I visited while in Europe. First, I had a great visit to CERN while in Geneva. Well worth the visit if you are ever in the area. CERN built the Large Hadron Collider, a great circle tunneled 100 meters underground, 27 kilometers long, spanning both Switzerland and France. It has two pathways for nucleons that travel in opposite directions at near light speed, all in a giant near zero temperature controlled superconducting magnet to control energy consumption. A very impressive engineering feat.

You need to get a ticket for a specific time ahead of the visit, but well worth doing, and easy to do over the Internet. There is a large demonstration area, with explanations of the various equipment and experiments that CERN is working on. The scale of the place is difficult to imagine until seen up close. This is where conditions that mimic the early Universe are produced and studied, important for both particle physics, cosmology, and astronomy. I highly recommend a visit if near Geneva.

Next, in Bern, Switzerland, I visited both the Einstein Museum, and the Einstein House (the apartment he lived in where he did all his early seminal work, from the photoelectric effect, to the Special theory of relativity. The museum is three floors, and well worth the visit. There are many artifacts, and images of his life, and one gets a sense of the man, his life, and his environment. I think it was very well done, explaining many of the revolutionary concepts he developed, but also showing how he lived, his difficult early years, and his later acceptance and fame. His personal life is very well documented.



Photo Courtesy Mario Motta

Mario standing in front of Alber Einstein's Bern apartment, now a museum, and... the neighbors

The apartment he lived in is small, just three rooms, but I enjoyed visiting it. I have included an image of the front of the apartment. Notice the apartment on the right states "House of Einstein." Note the one on the left, is the "House of Schmuck." No wonder people thought he was a genius, he would have been always compared to the neighboring schmucks! (Okay, my pardons to the Schmuck family, I could not help myself. The signs are for real though!)

Finally, I went to Interlaken, and went up Mt. Jungfrau. This is an all day excursion, several trains, including a long climb up the final section on a cog railroad that is tunneled right up the center of the mountain to the top (the Swiss love to tunnel) where there are spectacular views in all directions of the Alps, and surrounding glaciers as well. Note, on the top, there is an observatory, image shown. There are 2 domes. One is for meteorological research; the other dome has a 0.76m telescope, used for research. Unfortunately no one was there that day to get inside. Still was worth the trip to see the complex and the impressive views of the Alps!



Photo Courtesy Mario Motta

The Sphinx Laboratory atop Mount Jungfrau

Finally, we went to see Strasbourg, on the Rhine River. We visited the central cathedral, where the most impressive astronomical clock exists that I have ever seen.



Photo Courtesy Mario Motta

The enormous astronomical clock housed in Strasbourg Cathedral

It is three stories tall and not only keeps track of both mean time, but also sidereal time on the clock face, using four clock hands. It also has a face that shows the position of all the visible planets as seen from the city, the phase of the moon, the equation of time, the day of the week, and the position of the sun in the Zodiac. It also automatically calculates the main Christian feast days. There are many other features that would require a full lecture to describe.

~ Mario Motta ~

Sky Object of the Month

Gamma (γ) Andromedae (Almach) – Double Star in Andromeda

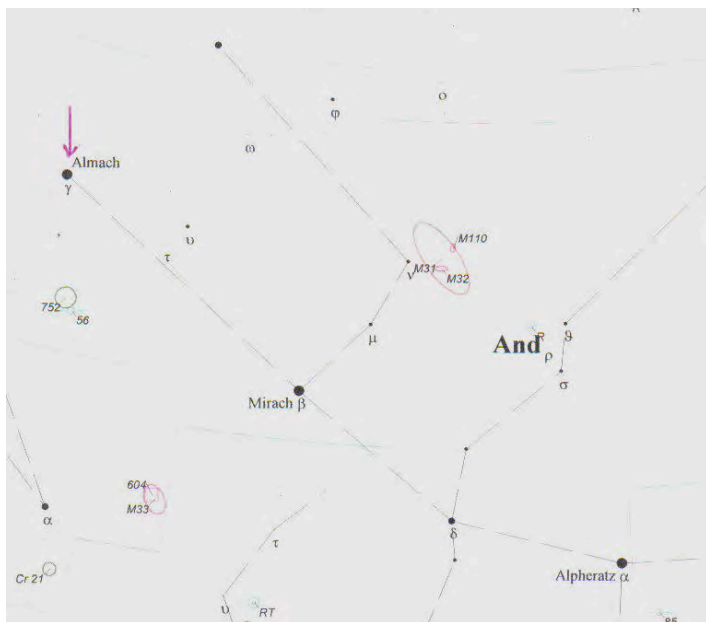


Illustration from "Touring the Universe with Binoculars(TUBA) Star Atlas"
Finder chart for gamma (γ) Andromedae (Almach)

Last month, I suggested that our featured object, Albireo, may not be the most beautiful double star in the sky and I'd introduce a rival this month. If you guessed that Albireo's challenger is Almach, the gamma (γ) star in Andromeda, you'd be correct!

The popularity of both Albireo and Almach lies in their stunning golden yellow and deep blue colors. I give Almach a slight edge because its component stars are much closer (slightly less than 10 arc-seconds) than Albireo's (34 arc-seconds). While Albireo begins to lose some of its visual appeal at high magnifications, Almach is still an impressive sight at powers of 100X and up. Almach is readily resolved by even the smallest telescopes. Moreover, I found its colors to be more intense when viewed with a 3-inch reflecting telescope than with the 6-inch Clark refractor at the Oak Ridge Observatory in Harvard, Mass.

The latter instrument, however, revealed something the little 3-inch never will. Almach's fainter component, gamma2 (γ_2) is a close magnitude 5.1 and 6.3 binary with a period of about 64 years. The two were near their greatest separation (0.6 arc-seconds) when I viewed them with the Clark in 1980. Even then, extremely steady skies and a magnitude of 360X served only to elongate the pair. Right now, the two have closed to a separation of less than 0.1 arc-seconds – a challenge for even the largest telescopes.

We're not done! The magnitude 5.1 component of gamma2 is a spectroscopic binary with an orbital period of just 2.76 days. Gaze at gamma2, and you're looking at a tight orbiting triplet!

Both Albireo and Almach are visible on November evenings. You've heard my opinion about the two. Now it's your turn to

see for yourself. View both with a variety of magnifications (and telescopes, if possible). Do you agree with my impressions? For a second opinion, read Greg Stone's comparison of Albireo and Almach on the *Starsplitters* web page at <http://bestdoubles.wordpress.com>. Once you've accessed the site, enter "Almach and Albireo" in the search box. A quick scroll will get you to his article, *Almach: GOLD and blue; Albireo: BLUE and gold – Both: priceless!* By the way, *Starsplitters* is a collaboration of double star fanatics Greg Stone and John Nanson. It is a **must** site for the double star enthusiast.

~ Glenn Chaple ~

New Newsletter Policies

I will be attempting to push publication of *Star Fields* much closer to the beginning of the month. Lately it has often been released inconveniently close to our monthly meeting. In an effort to streamline the whole process, I'm offering some adjustments to our usual practices and restating some existing matters of policy to address several issues that have caused delay in the past.

- Proper submission of material for the newsletter is by sending a message to newsletter@atmob.org. Please do not send material to any other addresses.

- Submissions received more than twelve hours after the deadline with no prior arrangement or approved request for an extension will not be accepted. This also applies to club officer and committee reports.

- Articles longer than two paragraphs must be sent as a separate attachment, not just in the body of an email.

- Acceptable file formats for articles are: .doc, .docx, .rtf, .txt, and .pages. PDF files are not acceptable. Articles including images should also include full resolution images as attachments. Images may be rearranged according to layout needs.

- Acceptable file formats for images are .jpg, .png, and .tiff. PDF documents are not acceptable. Images accompanying articles should also be attached as separate full resolution files. Please include a brief explanation of what is going on in the images, who is in them, and who created them. Images may be submitted without an accompanying article.

Please feel free to send any questions regarding these policies my way. I fully expect to need to do some coaching on the technical requirements. And thank you all for your cooperation in helping to make a better newsletter.

~ Ross Barros-Smith, Newsletter Editor ~

December *Star Fields* DEADLINE

Noon, Sunday, November 20

**Email articles to the newsletter editor at
newsletter@atmob.org**

POSTMASTER NOTE: First Class Postage

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How to Find Us...

Web Page www.atmob.org

MEETINGS: Held the second Thursday of each month (September to July) at 8:00PM in the Phillips Auditorium, Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge MA. For INCLEMENT WEATHER CANCELLATION listen to WBZ (1030 AM)

CLUBHOUSE: Latitude 42° 36.5' N Longitude 71° 29.8' W

The Tom Britton Clubhouse is open every Saturday from 7 p.m. to late evening. It is the white farmhouse on the grounds of MIT's Haystack Observatory in Westford, MA. Take Rt. 3 North from Rt. 128 or Rt. 495 to Exit 33 and proceed West on Rt. 40 for five miles. Turn right at the MIT Lincoln Lab, Haystack Observatory at the Groton town line. Proceed to the farmhouse on left side of the road. Clubhouse attendance varies with the weather. It is wise to call in advance: (978) 692-8708.
