

Cape Cod Astronomical Society - Minutes of the July 2, 2015 meeting

Attendance: 25 members (including 4 new members)

The meeting was held at the Dennis-Yarmouth High School Library.

Tonight's speaker: Bernie Young in place of Alicia Soderberg. Ms. Soderberg was detained in traffic.

In addition to Bernie's presentation, below, the following items were discussed:

- New officers for the Cape Cod Astronomical Society for 2015-16 were presented by the nominating committee and elected by the meeting attendees (there were no other nominees):
 - Mike Hunter, President
 - Ed Swiniarski, Vice-president
 - Secretary – Gus Romano
 - Treasurer – Peter Kurtz
- Also, Joel Burnett was elected to fill out the remaining time on the open trustee position of the Cape Cod Astronomical Foundation vacated by Werner Schmidt (now Chairman Emeritus).
- Beginning July 9, there will be a public Star Party at the Schmidt Observatory every Thursday, 8:30pm, through August 27 (except August 6 when we have our regular meeting in the D-Y library).
- Joel gave a brief update of the Observatory, including: slides on the gear repair on the 16 inch by Bernie, Mike and Joel; the new monitor installed in the dome; and the 42 inch TV in the observatory which can be moved outside as needed.
- Charlie Burke discussed the success of last week's open star party (originally planned for AmeriCorps, but open to the public and advertised in the paper when the AmeriCorps participation fell through).
- Mike requested that everyone at the meeting write down what topics, presenters, etc. would inspire them. These were collected and results will be analyzed.
- Joel announced that thanks to the D-Y High School electrician, Dennis Walsh, we can now shut off the school's outside lights flooding the dome with a wireless key fob. Fob should be aimed in the direction of the gym where the sensor is located.
- Joel also mentioned that new finder scopes with illuminated reticles were installed on the 16 inch, 18 inch and Ritchey-Chretien.
- Mike appealed to attendees to volunteer to be part of the Society support team that takes responsibility for particular telescopes (repair, adjustment, operation and general support). Example: Hank, Gus and Mike repacked the Losmandy mount with fresh lubricant.

- Joel passed around a photo book compiled by Sandra Cashen, Facilities Manager, D-Y High School, consisting of photos from the 10th anniversary of the Observatory and Werner's 100th birthday celebration.
- Upcoming meeting topics:
 - August – General Theory of Relativity
 - September – Open
 - October – Hardware brought in by members and discussed – “October ‘Scope and Equipment Showcase”
 - November – we are hoping Professor Tim Barker of Wheaton College will be able to give his presentation on the Apollo Project to include bringing actual samples of moon rocks borrowed from NASA.

Title of Bernie's presentation:

Leap Second 2015: 2015 06 30 25:59:60

- UTC (Coordinated Universal Time) began in 1961. Adequate for most civilian purposes. Approximates UT1.
- Mean Solar Day is lengthening; duration of tropical year undependable.
- Cesium 133 atomic clocks are a stable reference. UTC derives its accuracy from these clocks (actually average of hundreds of clocks).
- UT1 – based on rotation of the earth. Relation of earth's rotation with respect to distant Quasars. International Celestial Reference Frame (ICRF) – modern replacement for GMT.
- Sun wobbles due to influence of other objects (e.g., gas giants): perturbing; effects Kepler's original calculations.
- Reference Frame – based on 212 radio sources. Changes (currently decreasing) rate of slowdown; no one sure of why rate changes.
- Goal is to control time differences to one second. Adjustments only made June 30 and December 31.
- Since 1972, 26 leap seconds have been added.
- GPS uses a transmitted almanac rather than a direct time adjustment. E.g., data includes location of satellite, difference between GPS and UTC. GPS receivers calculate the time. Our GPS unit on the 16 inch has an accurate clock and receiver. Data retained for about a week.
- International Second (SI) defined in terms of the Cesium atom in 1967. Local gravity (i.e., altitude) impacts accuracy. Acceleration of gravity measured in GALS. In 1977, participating atomic clocks were connected.

The meeting was adjourned at 9:15 PM.

Next meeting: August 6, 2015.

Respectfully submitted,
Gus Romano, CCAS Secretary

