

19:04 - meeting started (Randy Hemann)

### **Meeting Attendees**

21 present:

Julie Gawarecki, Joseph Gawarecki, Mike Carlin, Bob Fealey, Rick Murray, Richard Palmer, Alan Cameron, Ron Purdue, Jeff Newland, Don Schlosnagle, Jan Schlosnagle, Dustin Ebert, Jay McLaren, Noel Taylor, Dan Strain, Josef Chlachula, Roger Southwick, David Meyer, James Benthall, Larry Mascotti, Randy Hemann, and Brandon Wyman.

### **Treasurer's Report**

17 to 18 paid members. Paypal renewals slick, unless one wants a different email for the league.

2 calendars left, \$15 each, one more that was paid for but left behind at last meeting.

Cell phone adapters. Randy needs one. Josef has, Chris had them delivered to him.

### **Observing Notes**

- Bob Fealey said that there were no sunspots for the last 25 days. Randy said that he saw some over the weekend, four, with Wallee. Jeff Newland also saw some on Saturday. Josef pointed out that there was some problem with SOHO updating pictures on the regular website, they are being posted to a different website for now.

### **News**

- Messier Marathon is coming up, March 16th/17th. Doesn't seem possible, but we will see what becomes of that.
- NCRAL May 4th/5th. Sturgeon Bay, Wisconsin. About 5 plus Randy plan on attending. Texas star party that same weekend. Other star parties throughout the year.
- Nothing posted for next month, but Randy thought Jack Wiltsie would be presenting something.
- April is the outdoor meeting and Randy's place.
- Astronomy day is the 21st of April, Jeff Newland pointed out that Randy had the date(s) wrong.
- Jeff Newland noted something he heard about via his wife. The Hormel Institute is looking for some help, Saturdays, every month. Information will be posted in the forum.

### **RAC Meetings/Calendar**

- Feb. 16/17      Dark Sky Weekend
- Mar. 13         RAC meeting - presentation tbd
- Apr. 10         RAC meeting - Outdoor meeting
- Apr. 13/14      Dark Sky Weekend
- Apr. 20/21      Dark Sky Weekend
- Apr. 22         Lyrid meteor shower
- Apr. 21         National Astronomy Day
- May 8            RAC meeting - presentation tbd

## **Other News/Notes/Announcements**

- Texas Star Party May 6th-13th.
- Nebraska Star Party August 5th-10th.
- Okie-Tex Star Party October 6th-14th.
- Enchanted Star Party October 16th-20th.

## **Featured Presentation**

Planetarium presentation, journey on a light beam.

“Cosmic Origins Spectrograph” - Paul Larson

- Paul mentioned that he appreciates the club’s willingness to partner up with the school and planetarium. It is really nice to have those observing sessions set up outside after the presentations.
- The song that was playing as we came into the planetarium was “Life on Mars” by David Bowie. That was due to the Falcon Heavy launch last week, where a car was launched into space. It is a Tesla roadster, with a mannequin, “Starman” (a reference to David Bowie), dressed in a real space suit. “Starman” is listening to that song, over and over and over again. That launch was the first time a rocket that powerful has ever been launched. Elon Musk gave the launch about a 50/50 chance of working, expecting it to blow up on the launch pad. Instead of using a big mass of concrete for the test payload, and the military passing up a free ride to launch something (expecting it to blow up), Elon Musk donated one of his cars as concrete is just boring. The car was set up with a bunch of cameras, live streaming for six hours. The car is on its way to an orbit passed Mars, to the sun, back to Mars....
- Paul said that today’s topic is about light. We are going to be talking about the different spectra we can see from light, and the different elements. Every element has its own fingerprint.
- Spectrum diagram.
- On Earth we do not get to see all of the electromagnetic spectrum coming down from space. Some of that is good, cosmic rays and gamma rays do not make it through our atmosphere. This is why we have telescopes in space.
- A periodic table with sources of various elements was shown (Big Bang, large stars, supernova, cosmic rays, small stars).
- Spectrum glasses were passed around. A white light source turned on first and looked at with glasses, seeing a full rainbow of colors, the full spectrum. Next glass tubes with hydrogen, helium, argon, sodium, mercury, and neon, were lit up, seeing different lines, the signature lines for each.
- The demonstration with the lights was to get acquainted with various terminology to be used in the video.
- Emission and absorption spectra were described. An example of the absorption spectrum from our own sun was shown, each star has its own unique spectrum.
- Red-shifted and blue-shifted spectrum described and shown.
- The Hubble telescope, its “corrective glasses”, and various other servicing missions were talked about. Very few people outside of our group know about all the instruments that are on the Hubble space telescope, such as the Cosmic Origins Spectrograph (COS).
- Movie: “Cosmic Origins Spectrograph”.
- Jay McLaren asked how one gets the distances. That is the one question that Paul had not yet come up with an answer for. He asked if anyone in the room had an answer for that. His best explanation was

that they are corroborating information from other technology, not just relying on one piece of technology. It is the one question he needs to research more, he actually had a 10 year old ask him that same question. With students, he finds it inspiring that when they leave, they often have more questions than answers, prompting them to go off and investigate or research the topic more. Randy brought up the Hubble constant, redshift, velocity, etc.

- There was a discussion about galaxy groups, some gravitationally bound to each other, then another such group moving away from that group.
- Julie said that the presentation/demo at the beginning was great. She has always had this nagging question about how they really know the composition of the stars. To actually see it with our own eyes is something great. Jay commented on how the spectra get superimposed on each other and the challenge of separating those out to determine the different elements, the red or blue shift, etc.
- Paul pointed out that this great movie is a free movie.
- Paul used some other planetarium software to show some things such as constellations, the Milky Way galaxy, groups of galaxies, the Sloan Great Wall, filaments and void spaces, quasars, cosmic microwave background, and the outer edge of the observable universe. A thanks to Larry Mascotti for the planetarium upgrades, the incredible technology that can now be used.
- Randy mentioned the Community Ed Page, a link to it will be in our forum. An e-mail will also be sent out, as not everyone sees the updates in the forum.

20:31 – meeting adjourned.

Submitted by Brandon Wyman - Rochester Astronomy Club secretary