

Rappahannock Astronomy Club

Minutes, March 18, 2015, Meeting

In attendance:

- Bart & Linda Billard
- Don Clark
- George Clarke
- Ron Henke
- Jerry Hubbell
- Scott Lansdale
- Lauren Nicholson
- Tim Plunkett
- Mike Spragins
- Peter Turok
- Michael Epperly
- John Epperly

President Ron Henke called the meeting to order shortly after 7 p.m. Ten members and 3 visitors were present. We started with the business meeting to give Lauren Nicholson time to make it from work to give her program.

Program

Lauren presented the program “It’s a Zoo Out There.” She started with a description of the magnitude of data being produced by the Sloan Digital Sky Survey (SDSS). Previously, astronomical catalogs had hundreds of thousands of objects. In its first few years, SDSS added 230 million, and it now has more than a billion, which is double what it was 4 years ago. SDSS covers stars in the Milky Way, galaxies, quasars, supernovas, asteroids, and more. It is currently on SDSS-IV, which started in 2014, and data release 12 (DR12). DR12 contains the largest color image of the sky ever completed and includes object images, optical spectra, infrared spectra, and catalog data.

George Clarke asked about one of the belt stars in Orion that he read about—every few days it goes from emission to absorption lines. He wanted to know whether SDSS has it. Lauren said he could look it up himself, adding she would be showing how such queries work later in the presentation.

As a result of the huge increase in data, a researcher and his graduate students can no longer handle the amount of data available to study on their own. On the other hand, the opportunity to replace studies of one or a small number of objects with research on large, statistically representative samples of objects is an important step forward. This situation was the inspiration for “Galaxy Zoo” (www.galaxyzoo.org). The first version hosted SDDS images of galaxies online, and anyone interested could register to learn about galaxy classification and view and help classify the objects. In its first year, Galaxy Zoo obtained more than 50 million classifications. Galaxy Zoo is now on its fourth version, with data and results from the first three available to SDSS members.

Lauren used classifications from Galaxy Zoo in a research project she did at Case Western. She showed some SDSS images used by Galaxy Zoo with a normal spiral, a red spiral, and an elliptical galaxy, and showed how they fit in Hubbell’s classification scheme. Her project focused on “S0” class galaxies, which are at the branch of the tuning fork shape arrangement of galaxies in the classification scheme. They have indications of spiral structure, but are red, like elliptical galaxies. They do not show star formation (are “red and dead”), suggesting that they are spiral galaxies that lost star-forming gas and dust in past encounters with other galaxies in a cluster. However, Lauren told us models for S0 galaxies have not been effective, and the mechanism for their formation is still strongly debated. Attempts made to study them have been limited by the difficulty of finding enough examples. With the advent of SDSS, it became probable that many S0 galaxy examples would become available, but which objects were they? Her project addressed whether Galaxy Zoo classifications could help identify S0 galaxy examples.

Lauren said that her project found Galaxy Zoo participants did well with classifications of definite spirals or ellipticals, but not so well with in-between galaxies that had spiral features but stars that were “red and dead.” They tended to lump the S0 galaxies with elliptical galaxies. She thought limitations in how the dim galaxies display on the participants’ computer screens might contribute to the inability to distinguish the spiral features.

Lauren concluded her presentation by introducing us to the website, www.sdss.org. Anyone can search for and view data that has been released. She had SDSS images incorporated into the planetarium where she worked, and she could simulate where the objects are for the audience when showing the objects. The site supports searches using Structured Query Language (SQL), and includes a tutorial on using SQL. Some more advanced data searching tools require registration, which allows the user to save queries and results for later use. Lauren suggested going to the website and starting with Data, Datasets. You can use Navigate to browse through imagery by dragging and zooming in or out, or by entering coordinates. As she demonstrated, you can also perform searches with Criteria SQL Search or Casjobs (which requires you to create an account). A PDF copy of Lauren's presentation is posted on the club website [programs page](#).

Old Business

- Treasurer's Report—The report for February had no new dues payments or other incoming funds, and no expenditures. The number of paid memberships for 2015 reached 11, and one dues payment has been made for 2016. Ron had not received the Treasurer's report email, which was addressed to president@raclub.org. He made a note that that forwarding entry should be checked.
- Loaner Equipment—Scott Lansdale had no new equipment information but reported that he had worked with Terry Barker on updating the website.
- Public Outreach Event for England Run Library—Scott said the event would be Saturday, June 6, from 1–5 p.m., with the first hour for setup. He had submitted a plan for using two conference rooms and received a positive response. One room would be for talks on astronomy topics aimed at families, and one room would be for displaying equipment. He asked for some topics for talks and commitments for supporting the event. One suggestion was to display different telescope types and show what equipment typically comes with them, what extras would be needed, and what other extras might be nice to have. Ron asked members to look again at Scott's email requesting things to talk about and interest in participating and send him a response.
- Update on the next Newsletter Status—Linda Billard said she was planning on using articles from Jerry Hubbell on lunar topography, Bart Billard on occultations, Terry on web resources, and David Abbou on a topic still to be determined. She had asked Glenn Holliday about doing an article but had not received a reply yet. She was planning to write an article on the Planetary Society, and expected she would have enough even without one from Glenn. Ron asked about newsletters and a revised club brochure to hand out at the Astronomy Night at the National Mall event. Linda said she could get them printed at cost at one of the places she does volunteer work.
- Star Parties, Events, and Meetings—Ron said John Bachman asked for a backup date for the Stratford Hall outreach. He said we now have October 22, 2016, as the backup date. Astronomy Night also has a backup date this year. Jerry said the coordinator is working out an option for volunteers to stay in town overnight after the event.

New Business and Astronomy News

- Educational Star Party Request, Garrisonville Elementary School—David was contacted by the school with a request for a star party on April 24. Ron and David were planning to go and were looking for another volunteer. They anticipate between 75 and 100 participants.
- Fan Mountain—The University of Virginia Astronomy department observatory there holds an open house on April 10. The observatory includes a 40-inch telescope. Ron and Scott requested and received 12 tickets for use by club members. Ron proposed those who want to go might meet somewhere in the Fredericksburg area to carpool for the 2–3 hour drive, or choose a place in Charlottesville to meet and eat before continuing the rest of the way to Fan Mountain. He passed out tickets to members who had already asked for them, and he still had some if more members decide to go. Jerry suggested there would be 100–150 people visiting. He said the observatory has 4 telescopes and that the astronomy club sets up telescopes. Ron sent them an email asking whether we could volunteer to take telescopes.

Next Meeting

The next meeting is on Wednesday, April 15, 2015, at the Central Rappahannock Heritage Center.