

Rappahannock Astronomy Club

Minutes, February 9, 2011, Meeting

In attendance:

- Benjamin Ashley
- Jim Baker
- Barton & Linda Billard
- Don Clark
- George Clarke
- Scott Gingrich
- Joe & Sherry Francis
- Rob Friedel
- Jerry & Michelle Hubbell
- Mike Masters
- Alan Simpson
- Gaston Smith

President Mike Masters began the meeting at 7 p.m. Thirteen members and two visitors were present.

Program

Bart Billard talked about the NASA Kepler Mission for this month's program. NASA launched the Kepler space telescope on March 6, 2009. It is in an orbit of the Sun following Earth, where it nearly continuously monitors about 150,000 of the stars in its fixed 105-degree field of view. Davin Flateau, in a 365 Days of Astronomy podcast prior to the launch, described its mission as challenging the stars to a "staring contest." If a star "blinks" (gets dimmer for a while), it could indicate the presence of a planet in an orbit of that star that transits the star (crosses in front from our viewpoint). The Kepler Telescope is a precision photometer capable of detecting the dimming caused by the shadow of a planet the size of Earth crossing in front of a star similar to the Sun. It has 42 CCD detectors totaling 95 million pixels to cover the stars in its field of view. The mission is 3.5 years and can be extended to at least 6 years. That allows for observing four transits for a 1-year orbit that corresponds to the habitable zone of a star like the Sun. Four transits are necessary to confirm the dimming is caused by an Earth-sized planet.

As of the beginning of February, the results announced include confirmed discovery of 15 new planets and 1,235 candidates that still need confirmation. The candidates include 68 near the size of Earth, 288 of super-Earth size, 662 of Neptune size, 165 the size of Jupiter, and 19 larger. Fifty-four of the candidates are in the habitable zone of their stars, including five of the Earth-sized candidates. Planets in the habitable zone could have temperatures allowing water in the liquid state. In addition to planetary transits, Kepler is capable of detecting eclipsing binary stars and some binaries whose stars tidally distort each other enough to vary their brightness even if the orbits do not produce eclipses. Kepler has already discovered 1,879 new eclipsing binaries. Kepler can also detect changes in the light from some Jupiter-sized planets orbiting close to their stars; these changes are caused by the changing phase of the planet in its orbit.

Bart showed the Kepler Mission website and some other Internet resources available for further exploration of the subject. One of them is a Zooniverse project, Planethunters, where citizen scientists can try classifying Kepler data and looking for transits. One scientific benefit is to see if the ability of people to recognize patterns can complement the automated detection algorithms used to analyze the large amount of data Kepler produces. So far, Planethunters have identified more than 100 new stars, including eclipsing binaries and 90 potential planet candidates. For amateurs interested in detecting a transit of a Jupiter-sized planet, transitsearch.org has information and links to other resources. A copy of the talk with links to the resources is posted on the Club website.

Old Business

- Treasurer's report—Mike presented the Treasurer's report Tim had provided for January 31, 2011. Sixteen members have paid dues for 2011 (3 of them beyond 2011). Mike showed the *Sky & Telescope* confirmation of five Club members participating in the discount program. He agreed to email a copy to those listed.

- Status of Club loaner equipment—Joe said there were no changes in who had the loaner equipment. Brenda and Mike found some information on replacing the missing slow-motion control knob on the Orion equatorial reflector. The cost would be no more than about \$25.
- Events—Weather forced cancellation of both the January 29 primary star party at Caledon and the February 5 backup at Scott's. Mike showed the list of challenge objects that he had placed on the [Night Sky](#) Club website page for the February star party. Jerry Hubbell asked about challenge objects for binoculars. Mike indicated some beginner objects on the list would be appropriate and added that it was a good suggestion. The next primary star party date is March 5 at Caledon for the Messier Marathon. The backup for the Messier Marathon is April 2. The weekend after the primary date is not favorable for a Messier Marathon backup. Mike said April 9 could therefore be a suitable date for an outreach event at Lake Anna that was later on the agenda. The next Club meeting date is March 9 at the Library. The topic is how to use loaner scopes—custodians should come with their loaners. Scott was scheduled to give a talk on light pollution for the Falls Run Environmental Enthusiasts at the Falls Run Community Center on February 17, 7:30 p.m.
- Raclub.org domain name—Don was in the process of getting Club email addresses set up. He was waiting to retry a confirmation step that was unsuccessful. He probably entered the email address for the confirmation instructions incorrectly and was waiting for the required 14-day delay before retrying. Once the Club has a contact email address, he can complete the registration of the Club on the JPL Night Sky Network.
- Possibilities for an alternate meeting location—Professor King at University of Mary Washington (UMW) was unable to identify a suitable location for Club meetings at UMW. Joe said he asked Professor King about whether students might want to attend our meetings at the Library and whether a vanpool to the Library meetings might be possible. Professor King surveyed students and indicated five might be interested. Benjamin Ashley, one of the visitors to the meeting suggested he might be able to find a UMW location. He is an events coordinator for UMW. Jim Baker advocated Joe and Professor King contacting the UMW president. Benjamin said he also knew of others he could contact on our behalf. Mike suggested Joe and Benjamin should establish an email contact to pursue the possibilities. Mike also reported on an available meeting room in the United Methodist Church on Hanover Street. The room was available on Monday and Thursday evenings from 6 to 9:30 p.m. He asked whether anyone would be willing to go with him on a weekday day to look at the room.

New Business

- Lake Anna State Park outreach request—Cathy Corker from Lake Anna State Park contacted Mike about an outreach event. Mike suggested April 9. Although it conflicted with Glenn's Girl Scout clinic event on that weekend, Mike thought people who could get to one would be too far away to be interested in the other. He asked for volunteers for Lake Anna, and based on the response, said he would agree to the request and schedule it for that date.

Next Meeting

The next meeting is March 9, 2011, 7:00 p.m., at the Central Rappahannock Regional Library Headquarters, 1201 Caroline St., in Fredericksburg. Introductions will begin at 6:45 p.m.

Submitted by Bart Billard, Secretary