

Rappahannock Astronomy Club

Minutes, April 18, 2018, Meeting

In attendance:

Jean Benson
Bart Billard
Scot Busby
Don Clark
Glenn Faini
David Hiles

David and Kyle Irby
Chet Knights
Scott and Kimberly Lansdale
Peter Orłowski
Payal Patel
Matt Scott
Tom Watson

The meeting began at about 7 p.m. Thirteen members and two visitors were present.

Program

Tom Watson talked about “Autoguiding on the Cheap,” which he said could be called something like autoguiding “for amateurs who are not familiar with it” if it scanned better as a title. He explained that telescopes that track worked well for visual observing, but asked, “what about taking images?” Tom said German equatorial mounts (GEMs) had an axis to align with Earth’s rotation axis (near Polaris in the sky) and some had motors to compensate for the rotation, but even with perfect polar alignment, imperfections in the gearing would cause “periodic errors.” With the long exposures needed to image stars and deep-sky objects, the images would be degraded by these periodic errors. Autoguiding was needed to correct these and other errors in the real world.

When Tom won his first telescope from a Celestron image contest (he only had microscope images to submit at the time), he looked for help in getting satisfactory images with it. The cost at the time was prohibitive but has since improved to as little as \$350.

Tom said those who were into really fancy telescopes should talk to a more experienced astronomer about more professional solutions than he would cover in the program. He showed a copy of fellow club member Jerry Hubbell’s first book, *Scientific Astrophotography*, as an example. Tom showed images of M42 to compare an autoguided image with 38 60-second exposures made with an Orion Short-Tube 80 telescope with an image made with an unguided 103-mm Ritchey-Chretien telescope. He said he used a free program called DeepSkyStacker, and Scott Busby said he also used it and might give a presentation on how to stack images with the program. They discussed image formats they worked with. Tom had to use JPEG or convert to TIFF (but TIFF required a fast computer). Glenn Faini said his JPEGs came out better than raw images. Tom thought he could show Glenn how to get that JPEG quality after working with the original raw images.

Next Tom went over the steps for imaging with an autoguider. Point to Polaris. Check the telescope balance and such adjustments. Connect the guider to the mount using the telephone jack connectors and cable. Connect the guider to the computer with USB. (It sends data to the computer and gets corrections back rather than calculating them and sending directly to the mount. Scott explained that putting the computer in the loop allows it to show you what is going on.) Adjust the guide camera in or out to find the focus (usually not necessary after the first time). Start the software. Tom said he used PhD2 Guiding and found it works great out of the box. He demonstrated the setup, using the simulator to show what the displays were. The image was at the upper left, with a profile of the selected guide star next to it. The software could autoselect the star with a tool provided. For a first-time setup and probably each time when setting up equipment after taking it apart and putting it away overnight or longer, run the smart calibration to allow the program to determine the response to its guiding commands. Tom commented that for a large telescope, it would be necessary to use something bigger than the finder his autoguider was mounted on.

Scott Busby said you could select how “aggressive” the corrections should be, to deal with backlash, for example. Also there was a camera accessory called PoleMaster available for many GEMs. It would “walk you through” polar alignment. Glenn Faini asked about stacking, saying he was not guiding. He thought

stacking could achieve the equivalent of longer exposure. Tom described the process somewhat differently, indicating the stacking software tried to select better features from images to combine into the final image. The discussion got into using layers in Photoshop.

Old Business

- Communications—Don said that a WordPress update was coming soon, but he would wait a while to switch to it. He could try it first on a test version of the website first.
- Events Held—Caledon star parties on March 17 and April 14 were successes. March included a program by Glenn Holiday and limited viewing. April included a program and lots of viewing. More than 15 guests saw almost as many objects. Some club members stayed past 11 p.m.
- Treasurer's Report—Tim Plunkett's report for February 28 showed one member's dues payment and his report for March 31, 2018 showed no changes from February. Scott Lansdale noted some members have not yet remembered to renew for this year.

New Business

- Planned Outreach Events—In May Dahlgren had a STEM night scheduled. Glenn Holiday was planning to participate in the Renaissance Faire, which would continue into the beginning of June. Caledon had requested a presentation on "Astronomy in 1818" for the 200th anniversary celebration. Programs are planned for Caledon star parties from May through October.
- Meeting Programs—Scott Busby offered to present something in September, but changed to June when he found out no one had signed up for that month yet. Tom agreed to do the September program. No program would be needed for the August picnic meeting on the 11th.
- General Discussion—Scott Lansdale asked one of the visitors about his interests in astronomy. The visitor said he was a junior looking for an internship project. Scott said that was something he did 20 years ago. Tom Watson suggested borrowing a club telescope, and Scott suggested using MSRO. Glenn asked about the Bahtinov focus mask he got after a recommendation at an earlier meeting. He wanted to know whether adjustment was needed for closer objects after focusing on a star. The answer was even the Moon was not enough closer to make any difference.

Next Meeting

The next meeting is on Wednesday, May 16, 2018, at the Headquarters Library on Caroline Street, downtown Fredericksburg. We will be in room 2.