MILWAUKEE ASTRONOMICAL SOCIETY

Focal Point

January, 2013

Inside this issue:

The January Membership Meeting

Scott's 7.5 inch Mak/Newt telescope on his full GOTO homemade mount set up next to the famous Porter Turret Telescope at Stellafane, home of the Springfield Telescope Makers.

The next Membership Meeting will take place on Friday, **January 18th,** at UWM, Physics building, at 1900 E Kenwood Bld. (parking available in the Science Parking Lot.). The room 133 is located next to the Manfred Olson Planetarium entrance. The meeting will start at 8:00 PM.

The speaker of the night will be **Scott Jamieson**, who will talk about his experience with the Stellafane Convention, which is a gathering of amateur telescope makers. It was started in 1926 to give amateur telescope makers an opportunity to show off their creations and teach each other telescope making and mirror-grinding techniques.

Resignation of the President

Since I will not be able to fulfill my duties as President in the coming new year due to my schedule and other commitments, with sadness, I hereby resign as President and from the board of directors.

However, as a key holder member I will still help others learn to use the equipment. I will also help with public nights and other items for the society when I am available. Wishing you all a Happy and Healthy New Year.

Henry Gerner

Member's Stories

Planetary Imaging

I live in light polluted Franklin. What kind of Astronomy can be done from my backyard? Deep sky observing? Not! But observing planets is not affected by lights since they are usually very bright and can pierce the bright skies. As an added bonus, planetary observing doesn't require an especially large telescope. While larger is generally better, it's the quality of the optics that counts most.

This is the area where small refractors or a specialized optical system called Maksutov-Cassegrain shine. These telescopes are designed with maximum image quality in mind. The Maksutov is a catadioptric telescope design that combines a spherical mirror with a weakly negative meniscus lens. (http://en.wikipedia.org/wiki/Maksutov_telescope) The design corrects the problems of off-axis aberrations such as coma found in reflecting telescopes while also correcting chromatic aberration. That is the type of telescope I bought last spring to do planetary imaging. It is very compact at 180mm f/15 (7.1") diameter, 22" long and only 16lbs.! This compactness is very important as I need to carry it out from my garage to the back patio each time I want to use it.

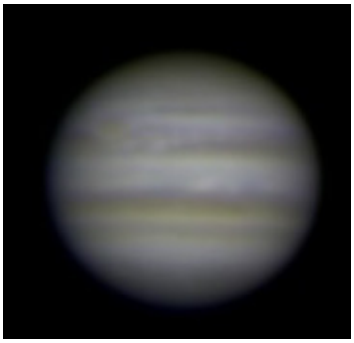
180 mm Mak-Cass

With this telescope, a laptop, an inexpensive webcam (Orion StarShoot Solar System Color Imaging Camera IV) and free software (Registax6), I have been able to take some amazing images! The process is fairly straightforward. Once you acquire the planet in the scope visually, replace the eyepiece with the webcam. Next, use the preview image on the laptop to focus the image. This can be tricky because you may not see the planet right away and may be caused by being out of focus or the planet not being in the field of view. I practiced on the very bright Moon first (and got more stunning images).

Once the planet is focused, you use an image capture software to take the images. A basic version comes free with the camera, but I bought a more capable version online (K3CCDTools). The software takes an .avi movie of the planet, consisting of hundreds of short exposures at 8 frames/sec over a span of up to 2 minutes for fast rotating planets like Jupiter & Saturn or 4-5 minutes for slow rotators like Mars, the Sun and the Moon. Here is a typical frame from the avi movie file:

Unprocessed avi frame

Next, use stacking software to align and stack the best images. This process is all automatic and takes only a minute or so. The software takes each image, determines if it is a good one, aligns it with the others (since a planet's image moves slightly during the exposure!) and then stacks it on top of the other good images to reduce noise and blurriness. This results in a raw stacked image.



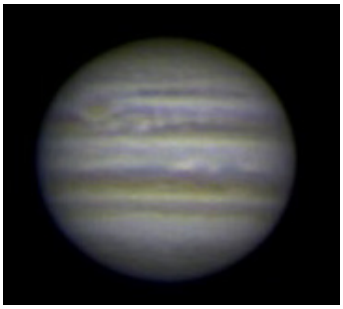
Stacked raw image

The next step is to do some image processing. This is the part where it can get very elaborate.

(to be continued on page 3.)

Member's Stories

Since I am just a beginner, I have been using the image processing capabilities of RegiStax6. I downloaded some suggested processing setting from their website and used those to process my images. This takes only 15 seconds and results in the final image. One can change things like contrast, brightness, hue, luminance and many other things I don't understand yet, but the defaults work well and I just crop the image before saving to save space. Notice the difference from the raw stacked image?

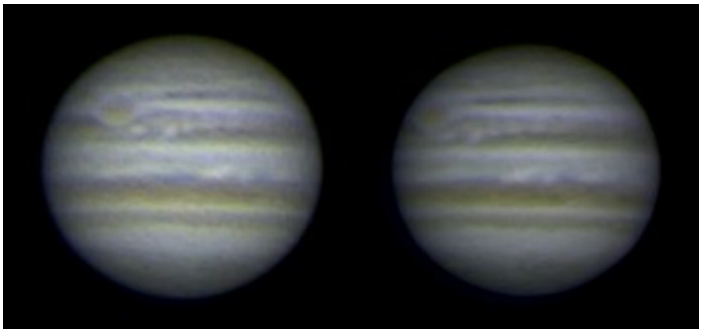


Final processed image

To my knowledge, the MAS does not have a webcam camera appropriate for doing planetary work, though I may be wrong. If some interest is shown by some members, I'm sure this can be corrected since these cameras can be very inexpensive.

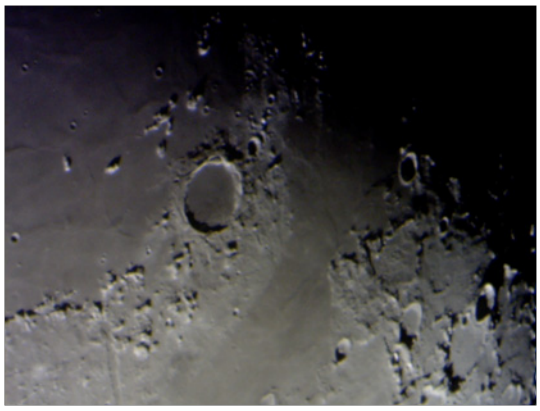
Since I have been doing this only since last April, I have a lot to learn. If there is anyone else in the MAS doing this type of imaging, please contact me at 414.425.2331 or leekeith1@juno.com. I would love to talk to you on tips and techniques I can use to improve my images.

by Lee Keith

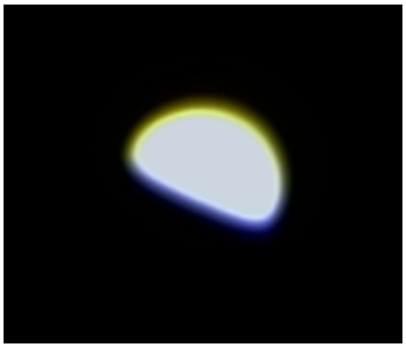


Images taken 8 minutes before and 25 minutes after the one in the left column. Notice the planet's rotation to the left

Here are some images of other bodies:



Moon Plato Crater



Venus

Saturn

Classified

13.1" AstroSystems kit-made Dob for sale: Price is dropped

I've dropped the price of my Dob to $2.000
(Originally cost ~ $4,000.)
Astromart ad (with many more photos):
http://www.astromart.com/classifieds/details.asp?classified_id=798568

Rob Powell
1429 W. River Oaks Ln.
Mequon, WI 53092
cell: 262.894.2737
email: archerychampion@gmail.com

Treat yourself or a loved one interested in great views with a completely portable unit. Fits into the back of my hatchback (car not included).

This scope is a reliable powerhouse. At public outreach events, you will quickly have a long queue of interested viewers waiting to see DSOs and planets through your very portable and easily assembled Newtonian reflector.

13.1 inch Discovery mirror, beautifully refigured by Galaxy Optics in 2004; center spotted; f/4.5

Included features:

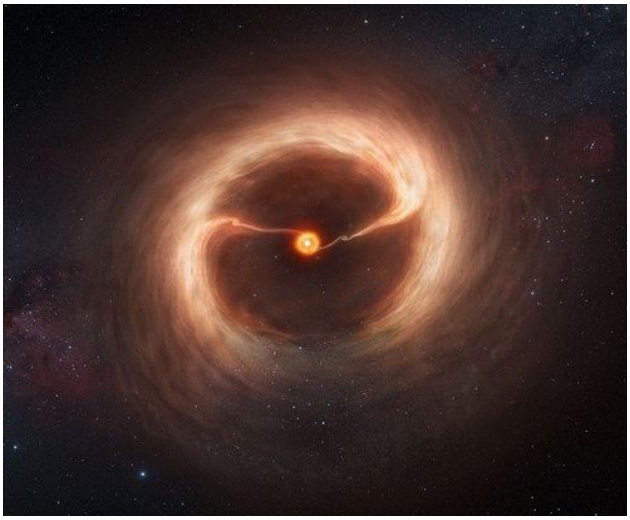
- 2.6" Secondary mirror (center spotted) with dew heater
- 2" focuser with 1.25 adapter (compression-ring style)
- 2" Kendrick laser collimator
- Televue 12 oz. brass "Equalizer" (2" to 1.25" eyepiece adapter)
- Light shroud
- Aluminum truss poles
- Tailgate mirror cell assembly (allows quick access to the primary mirror)
- SkyCommander digital setting circles
- QuickSwitch Filter Slide: 5-position filter slide (accommodates 2" filters)
- 2" Sirius Optics Planetary Contrast filter
- Mirror cover with built-in 4" aperture mask (hinged)
- 9x60 finder scope (AstroSystems "Woody Finder", with 25mm Plossl EP, included)
- Azimuth brake
- Telrad finder
- Wheelbarrow handles (detachable)
- Upper cage carry case
- Truss tube carry case

***** Will also sell 5mm, 11mm, and 17mm Naglers (the set of 3) for only $700 additional (will sell only with telescope) ***** (Equates to 298x, 135x, and 88x, respectively)

In the Astronomical News

Never-Before-Seen Stage of Planet Birth Revealed

Large gas giant planets appear to be clearing a gap in the disk of material surrounding the star, and using gravity to channel material across the gap to the interior, helping the star to grow. Theoretical simulations have predicted such bridges between outer and inner portions of disks surrounding stars, but none have been directly observed until now.



Artist's impression shows the disk of gas and cosmic dust around the young star HD 142527

An international team of astronomers have used the partially completed Atacama Large Millimeter/submillimeter Array (ALMA) to study a young star about 450 light-years from Earth. They identified two thin filaments of gas streaming from the outer disk to the inner, across a broad gap cut by young planets. The fledgling star HD 142527 is nearing the end of its formation process. Around 2 million years old, the young star is about twice as massive as the sun, though it is still slowly growing. A disk of spinning dust and gas left over from its formation surrounds the star, and from this material, planets are being created. As baby planets, or planetesimals, travel through the disk, they absorb the material around them, creating gaps. Such paths have been seen in a number of newborn systems. HD 142527 boasts a gap that starts at a point equivalent to Saturn's position in the solar system and extends outward 14 times as far. The gap, which scientists had previously measured, is so large that several planets would be required to clear it of debris.

Using ALMA to observe the system, Simon Casassus and his team have found that the gap is not completely empty. Two filaments reach from the outer disk to the inner, indicating that at least two young planets exist within the space. The gravity of the planets draws material from the outer ring inward. But while some of the gas and dust falls into orbit around the young gas giants, a fraction of it overshoots the planetesimals, traveling instead to the inner disk. Eventually, the star absorbs the material. These bridges are important to the continued growth of the system's young sun. The inner disk around the star is too small to sustain its growth; Casassus and his team concluded that the disk around HD 142527 would be depleted within a year without a bridge. Planets funneling material from the outer disk to the inner would help nourish their star.

In addition to revealing the bridges between the two disks, ALMA's detailed measurements showed that the gaps weren't completely empty. Instead, they contain traces of carbon monoxide gas.

The data was taken by ALMA during its first year of observation. The array of 66 telescopes, set up in Chile, is still under construction but should be completed this year, at which point Casassus plans to observe the system in greater detail. Although the dense gas of the filaments would obstruct a direct view of the young planets, studying the system at the higher resolution of the completed ALMA could reveal knots along the filaments that could signify their location. At the same time, a more precise examination of the leftover gas in the gaps could help astronomers to narrow down the mass of the developing planets.

The research was published online on January 2 in the journal Nature.

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by Space.com

Adopt a Telescope Program - Signup Sheet

	Adoptee	Scope	Location
1	Sue Timlin	18" F/4.5 Obsession	Wiesen Observatory
2	Neil Simmons	12.5" F/7.4 Buckstaff	B Dome
3	Russell Chabot	12.5" F/9 Halbach	A Dome (Armfield)
4	Dan Yanko	18" F/4.5 Obsession (Kyle Baron)	Albrecht Observatory
5	Tamas Kriska	25" F/15 Zemlock	Z Dome
6	Henry Gerner	12" LX 200	Tagney Observatory
7	Jeffrey Fillian	14" Z-Two scope	Ray Zit Observatory
8	Kevin & John McCarthy	10" LX 200	Jim Toeller Observatory

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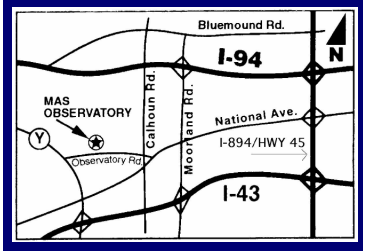
January/February Key Holders

1/12	Paul Borchardt	262-781-0169
1/19	Russell Chabot	414-881-3822
1/26	Brian Ganiere	414-961-8745
2/2	Henry Gerner	414-774-9194
2/9	Scott Jamieson	262-592-3049



MAS Observatory

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