SkyWAAtch

A New Guest in the Whirlpool Galaxy

Doug Baum provided this image of the Whirlpool Galaxy (M51), which highlights a recent Supernova (Supernova 2011dh). Spotted on May 31st by a French astronomer, the Supernova debuted at magnitude 13.5 and subsequently brightened to mag 12.6, within the visual reach of amateur telescopes. 2011dh is a type II supernova, so characterized by the presence of hydrogen in its spectrum, and was caused by the collapse of a star of at least 9 solar masses.

Doug used a 106mm quadruplet Takahashi FSQ-106 EDXII refractor with a QSI 532wsg CCD. For processing, Doug notes: The sub exposures were 10 minutes and I only had one for each filter (red, green and blue); I also added 3 exposures (10 minutes each) of luminance frames.

Events for July 2011

WAA Lectures

Upcoming Lectures
Miller Lecture Hall, Pace University
Pleasantville, NY

There will be no Lectures in July and August. Lectures will resume on September 9th.

Starway to Heaven

Saturday July 2nd, 9:00pm
Meadow Picnic Area, Ward Pound Ridge Reservation, Cross River

This is our scheduled Starway to Heaven observing date for July, weather permitting. Free and open to the public. The scheduled rain/cloud date is July 30th. Participants and quests should read our General Observing Guidelines and Directions.

New Members. . .

Ruth and Eugene Fischer - Pleasantville
Gary Miller - Pleasantville

Renewing Members. . .

Arthur Linker - Scarsdale
Steven Petersen - Briarcliff Manor
Alex Meleney - Greenwich
Tom Crayns - Brooklyn
Sushil Khanna - Katonah
Dante Torrese - Ardsley
Jose Castillo - Pelham
Jon Gumowitz - White Plains
James and Lucia Balestrieri - Tarrytown
Michael Clark - Pleasantville
Glen and Patricia Lalli - White Plains
John Paladini - Mahopac
Charles Sehulster - Crompond
Donna Cincotta - Yonkers

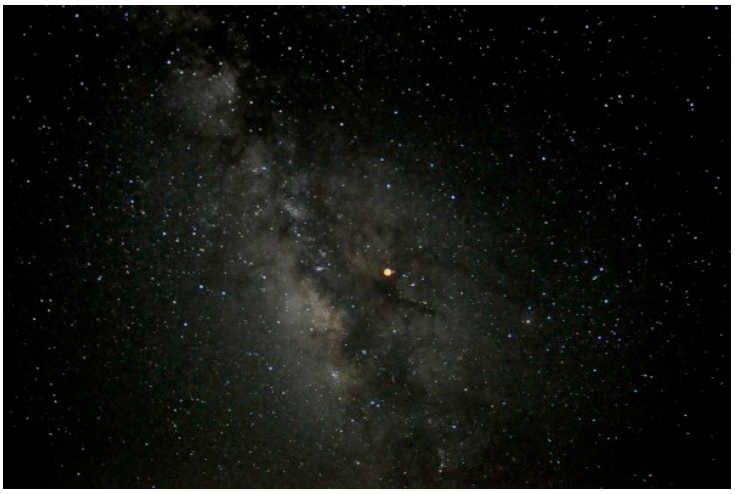
Acknowledgement

In Memoriam of George Klaus

The WAA gratefully acknowledges a $250 gift made on behalf of Andrew and Katherine Bonczyk in memory of Katherine's Father--George Klaus. George was a long time member of the WAA and its past Secretary. He passed away in 2006.

Call: 1-877-456-5778 (toll free) for announcements, weather cancellations, or questions. Also, don't forget to periodically visit the WAA website at:
http://www.westchesterastronomers.org/.

WANTED Co-editor: Individual to help edit the WAA newsletter. Initial responsibilities to be proof-reading, but eventually seeking someone to co-edit newsletter. Knowledge of Apple Pages would be helpful. Contact: Newsletter.



Eclipsed Moon and Milky Way

This impressive photo was taken by Master Sgt. Leon E Gray from a base in Afghanistan. For details check out Bob Kelly's Blog.

Westchester Amateur Astronomers, Inc., a 501(c)(3) organization, is open to people of all ages with the desire to learn more about astronomy. The Mailing address is: P.O. Box 44, Valhalla, New York 10595. Phone: 1-877-456-5778. Observing at Ward Pound Ridge Reservation, Routes 35 and 121 South, Cross River. Annual membership is $25 per family, and includes discounts on *Sky & Telescope* and *Astronomy* magazine subscriptions. Officers: President: Doug Baum; Senior Vice President: Larry Faltz; Vice President Public Relations: David Parmet; Vice President Educational Programs: Pat Mahon; Treasurer: Rob Baker; Secretary/Vice President Membership: Paul Alimena; Vice President Field Events: Bob Kelly; Newsletter: Tom Boustead.

Articles and Photos

An Astronomy Vacation in Arizona: Part II: Tucson and the Lunt Factory
by Larry Faltz

On Tuesday, April 26th, Elyse and I left Tempe, Arizona (see Part I last month) and headed down to Tucson, a 90-minute drive to the south through parched plains scattered with elegant saguaro cactuses (or cacti, if you prefer) and small, barren mountains. We checked into the elegant Arizona Inn, a 14-acre oasis of green grass and flowers that contrasted vividly with Tucson's omnipresent ochre dryness. Once on the outskirts of town, the resort has been enveloped by Tucson's growth and it's now just a stone's throw from parts of the University of Arizona.

Arizona Inn

After dinner, we had a nightcap at the astronomy-themed and aptly named Sky Bar, which bills itself as a "Solar Powered Café by Day, Astronomy Bar by Night". Located a few blocks west of the University, the Sky Bar features live music, pool tables, inexpensive beer, large astronomy murals and, outside, a 12" Meade LX-200 tended that evening by amateur astronomer Robby Tackett. There are also telescopes on the roof whose images can be projected inside the bar. Light pollution was significant, as expected in the heart of town (SQM 18.54). Tucson is the home of the International Dark Sky Association and has a lighting ordinance to help the research observatories outside of town, but at the Sky Bar DSOs were tough even with 12" of aperture (only the nuclei of M51 and its companion could be seen). We got a good look at Saturn and some double stars and spent a pleasant hour talking about astronomy and astro-gear. Another local astronomer showed us photos he had recently taken of the asteroid 4 Vesta, recording its movement against the background stars.

Inside and Outside the Sky Bar in Tucson

Robby told us about his work at Spencer's Observatory, a private facility west of Tucson with telescopes available for rent (including 10" and 14" SCTs). He also clued us in to a remarkable Tucson astronomy store, Stellar Vision, which specializes in used telescopes. This piqued my interest because there's no place I can think of that displays large quantities of pre-owned astronomy equipment. So we drove over to the store the next day and found what can only be described as the Great and Glorious Telescope Graveyard. On display were literally hundreds of scopes of all types and vintages, mostly used but all in excellent condition, along with binoculars, microscopes, mounts, cameras, astro cameras, meteorites, books, domes and accessories. My photo can't do it justice: you are looking at a tiny fraction of the telescope inventory. I was only able to resist because I had just gotten a new scope at NEAF, as Elyse kept reminding me.

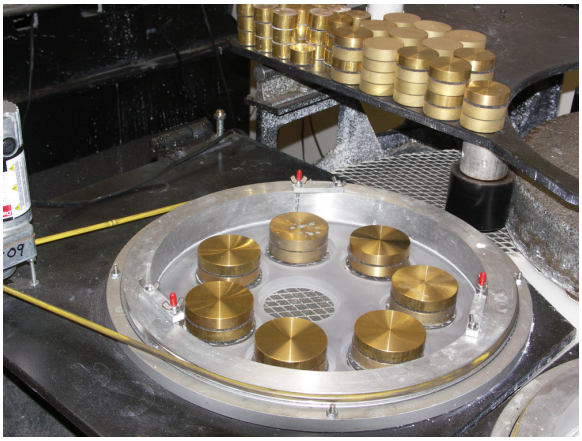
Stellar Vision Astronomy and Science Shop, Tucson

On Wednesday morning, we went to Lunt Solar Systems, located in a commercial park on Tucson's west side. We had arranged a tour of the facility with Rikki Hocking, who we've chatted with at NEAF several times over the past few years and who was a most gracious and informative hostess and tour guide.

Lunt was founded by Andy Lunt, whose father David started Coronado, the first company to make affordable hydrogen-alpha telescopes based on the Fabry-Perot étalon. After David's untimely death, Meade purchased Coronado. A few years later Andy, a talented and creative optical engineer in his own right, started Lunt Solar Systems with co-owners Alan Traino (of NEAF fame) and Markus Ludes (of APM).

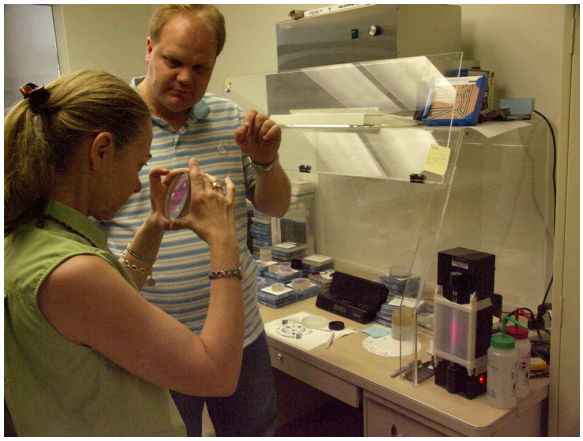
The critical component of the Lunt H-alpha scopes is the étalon, a simple and clever device that uses the interference of light waves bouncing between two reflecting surfaces to cancel unwanted frequencies. Two very flat ($^1/_{100}$ wave!) glass discs are each coated on one side with a partially reflecting material, then assembled as a pair with the coatings on the facing surfaces, air-spaced just the right distance apart (much better than $^1/_{100}$ wave) to yield the desired frequency (656.28 nm). To make the surfaces exactly flat, Lunt obtains high-quality optical blanks and polishes them on three automated multi-disc polishers. Each blank sits in a turntable, with a bronze weight on top to apply just the right amount of pressure. Generally, adjacent blanks are used to make each étalon.

Lunt's Rikki Hocking with an étalon blank



Polishing étalons at Lunt

Once the blanks are polished to the required flatness, they are coated and assembled with glass spacers of the required thickness. Then they are tested to ensure that the band-pass meets the necessary fine tolerance.



Elyse with Brian Stephens, Lunt's master étalon assembler, testing a completed etalon

Using very high-quality metal and optical parts from other suppliers, the telescopes are meticulously assembled and tested and then shipped around the world. We saw a large pallet of scopes being readied for transport to Europe.

An étalon in its cell

In the Lunt parking lot, we had a great look at the sun though the new double-pressure tuner 80mm telescope, which some of you might have looked through at NEAF's Solar Star Party this year. Stacking two étalons narrows the band-pass even more, increasing contrast and detail on the solar surface and in the prominences. This is the first double-stacked scope to have both étalons in the tube, making tuning much easier.

Currently, Lunt offers H-alpha telescopes from 35mm to 230mm in aperture, as well as a 60mm Ca-K band telescope and a white-light Herschel wedge, in addition to étalons and filters that can be used to adapt an existing telescope for H-alpha use.

Observing with the dual étalon 80mm telescope

After our Lunt experience, we headed out to the Arizona-Sonora Desert Museum, an excellent combination wildlife and botanical park 12 miles west of Tucson. From there, among the ocotillos and javelinas, we could see Kitt Peak 32 miles further west, which was going to be the first observatory we would visit on our coming Smithsonian astronomy trip. On our way back to Tucson, we stopped at the roadside Tucson Mineral and Gem World. I'm an obligate stopper at rock and fossil shops during my travels, and happily came away with an attractive hunk of pyrite. We had a pleasant chat with the owner, Richard Ratkevich, who gave us an Indochinite tektite (an earth rock that has been transformed into glass from a meteorite impact) and wished us "happy nebulizing".

Kitt Peak from the Desert Museum

We drove back to the Arizona Inn and went to the cocktail party that marked the beginning of our Smithsonian adventure, the subject of next month's article.

Finding Planets among the Stars
by Dr. Tony Phillips

Strange but true: When it comes to finding new extra-solar planets, or exoplanets, stars can be an incredible nuisance.

It's a matter of luminosity. Stars are bright, but their planets are not. Indeed, when an astronomer peers across light years to find a distant Earth-like world, what he often finds instead is an annoying glare. The light of the star itself makes the star's dim planetary system nearly impossible to see.

Talk about frustration! How would you like to be an astronomer who's constantly vexed by stars?

Fortunately, there may be a solution. It comes from NASA's Galaxy Evolution Explorer, an ultraviolet space telescope orbiting Earth since 2003. In a new study, researchers say the Galaxy Evolution Explorer is able to pinpoint dim stars that might not badly outshine their own planets.

"We've discovered a new technique of using ultraviolet light to search for young, low-mass stars near the Earth," said David Rodriguez, a graduate student of astronomy at UCLA, and the study's lead author. "These M-class stars, also known as red dwarfs, make excellent targets for future direct imaging of exoplanets."

Young red dwarfs produce a telltale glow in the ultraviolet part of the electromagnetic spectrum that Galaxy Evolution Explorer can sense. Because dwarf stars are so numerous—as a class, they account for more than two-thirds of the stars in the galaxy—astronomers could reap a rich bounty of targets.

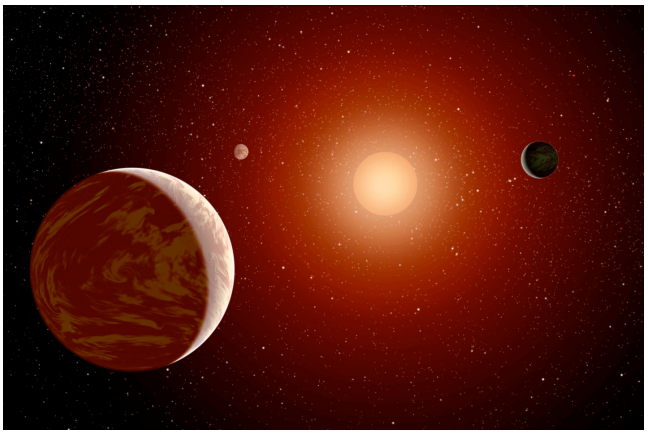
In many ways, these stars represent a best-case scenario for planet hunting. They are close and in clear lines-of-sight, which generally makes viewing easier. Their low mass means they are dimmer than heavier stars, so their light is less likely to mask the feeble light of a planet. And because they are young, their planets are freshly formed, and thus warmer and brighter than older planetary bodies.

Astronomers know of more than five hundred distant planets, but very few have actually been seen. Many exoplanets are detected indirectly by means of their "wobbles"—the gravitational tugs they exert on their central stars. Some are found when they transit the parent star, momentarily dimming the glare, but not dimming it enough to reveal the planet itself.

The new Galaxy Evolution Explorer technique might eventually lead to planets that can be seen directly. That would be good because, as Rodriguez points out, "seeing is believing."

And it just might make astronomers feel a little better about the stars.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



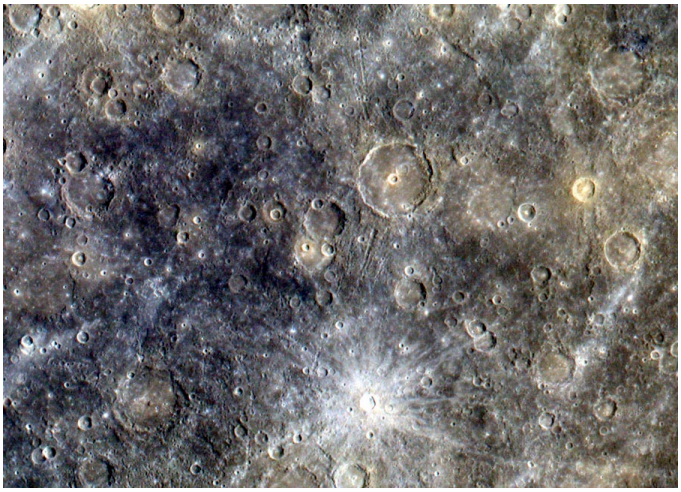
Exoplanets are easier to see directly when their star is a dim, red dwarf.

◀ The Prez Flipping Burgers

WAA President Doug Baum mans the grill at the WAA Picnic. Kudos on the grilled pepperoni. (Mike and Darryl in the background). Photo courtesy of Larry Faltz.

◀ The Whole Crew at the Picnic

Photo courtesy of Larry Faltz.



◀ Mercury's Surface

The MESSENGER spacecraft recorded these detailed pictures of the surface of Mercury using eight different colors across the visible and near infrared spectrum. It was looking for clues to the history and evolution of the solar system's innermost planet. This sharp image combines three of the MESSENGER wide angle camera's colors, but in an exaggerated fashion. Otherwise, to the unaided human eye, Mercury's surface colors would appear muted. The image is about 1,000 kilometers across and features as small as a single kilometer are discernible at the original resolution.

Credit: NASA/JHU APL/CIW

Almanac

For July 2011 by Bob Kelly

Jul 1 Jul 8 Jul 13 Jul 21

An almost un-seeable partial solar eclipse occurs on the 1st in the Southern Indian Ocean off Antarctica. Only 10 percent of the Sun's diameter will be covered at maximum eclipse. The next solar eclipse visible from our area is on November 3rd, 2013, when the Sun will rise half-eclipsed and decreasing. The next total solar eclipse for NYC occurs at sunrise on May 1st, 2079. I'd suggest trying for a cruise to a total eclipse or waiting for the one in the Carolinas in 2017 or western New York State in 2024!

Saturn is getting lower in the southwest each week. At quadrature on the 3rd, we can see the shadow of the planet making a black notch in part of the rings next to the planet. With the rings' shadows on the planet and the rings' tilt widening past 8 degrees, Saturn is lookin' very 3D in a telescope. Saturn also puts some noticeable distance between it and 3rd magnitude Porrima this month; no telescope needed to watch our dynamic solar system in action.

July and August are the months to find a friend with a beach house and a south-facing shoreline, away from the boardwalk lights. It's the best way to get lost in the star clouds of the center of our galaxy in Sagittarius, low in the southern evening sky. Get a good finder chart for the star clusters in the area. But watch your lunar calendar, since the bright Moon overwhelms the scene in middle of each month.

Asteroid #2, Pallas, is in opposition to the Sun on the 29th in Sagitta. At magnitude 9.5, it is the dimmest of the first four asteroids to be discovered. First to be found, 1Vesta has a visitor this month as the Dawn spacecraft eases into Vesta's weak gravity field. At 320 miles wide, Vesta may be large and round enough to be called a minor planet. Vesta isn't more than a dot in our telescopes, but it brightens up past 6th magnitude this month, on its way to mag 5.6 at opposition on August 5th.

With a clear evening sky in the west-northwest, you can watch Mercury bob up from the horizon, making a bid for attention at mid-month at zero magnitude, before fading and sinking in late July. Regulus is nearby to Mercury's upper left, but appears indifferent to Mercury's fate, not getting close enough to pull Mercury out of the twilight. Mercury gets as far as 27 degrees east of the Sun, the most for this year, but it's at a poor angle from the horizon for the Northern Hemisphere. Mercury grows from 7 to 8 arcseconds wide, but its phase shrinks from ¾ to ½ in the last half of the month.

Happy Birthday, Neptunians ! On July 12, Neptune completes one full orbit – one Neptune year - since it was discovered in 1846. Neptune (mag 7.9) and Uranus are up in the southern sky before dawn and worth finding if you are up early with your telescope. (Although, there's a reason why we only have Starways to Heaven in the evening!) Abrams Planetarium notes that Uranus, at magnitude 5.8, is within 1 degree of an orange magnitude 6.2 star which should make a nice contrast with the bluish planet.

So, you really want to see Pluto? Pluto is as bright (mag 14) and as high in the sky as it will get, in the southern constellation of Sagittarius. You'll need an 8-inch or larger telescope, very dark skies, and a good finder chart to get to the right part of the sky. Some of the many stars in Pluto's neighborhood are not always exactly plotted. If you make a sketch of the stars and go back a few days later to see which one moved a bit – that's Pluto. Sky and Telescope has instructions and a finder chart, saying that each year they print the chart they swear it will be the last year as Pluto recedes from us.

Jupiter reasserts its dominance at mag -2.3, one-third of the way up in east-southeastern morning sky. Follow Jupiter into the twilight. Often its cloud bands are easier to see with the brighter sky around it.

Before the morning sky gets bright, check out Mars, dim at mag 1.4 and low in the northeast, as it moves out of the horns of Taurus the Bull this month. Aldebaran, Mars and the Moon pose for photos on the 27th. Compare the red star and the red planet.

The Moon also points out Saturn on the 7th, Jupiter on the 23rd and 24th, and Mercury hangs over the thin Moon on the 2nd. Earth is farthest from the Sun on the 4th. The Delta Aquarids add some faint, medium-speed meteors to the background mix of meteors, peaking from the 28th though the 30th.

The International Space Station is visible for a few minutes most evenings though the 5th and in the mornings after the 24th. The last flight of America's space shuttle is projected to launch on the 8th and the final landing for the program scheduled for the 20th. The Air Force's X-37-B makes some good evening appearances later in the month, but they might change its orbit and not tell anyone, again.

The new crescent Moon heralds the start of Ramadan on the 31st.

Bob has a blog at http://bkellysky.wordpress.com/ .