



THE OBSERVER

East Valley Astronomy Club



The Hercules Galaxy Cluster
APOD 2014 June 25 - Ken Crawford

EVAC This Month by Claude Haynes

Remembering firsts is great. My first time to look through a large telescope was at the Flandrau Planetarium in Tucson. It was just an open cluster, but there were so many stars. I remember my first time to look through my 10 inch Dob. I remember seeing my first garnet star, a ruby that suddenly appeared while I was just slewing the telescope. I remember the first time I saw Omega Centauri. I remember my first really close up view of Jupiter. The joy and wonder of those firsts is something that you can participate in at a public star party, or by joining us on the third Monday of the next

three months for our Explore the Night Sky program for kids. That first extends not just to children, but the old grandmother that is with them. The pure unbridled joy of seeing more than the unaided eye can grasp.

Lasts often catch us by surprise. I certainly remember the first time I changed a diaper, but I don't recall the last (although I thought it would never end). When was the last time you went to Picket Post, or spent a night studying the moon or going through a list of double stars? Celebrate the firsts, but don't quietly create lasts.

UPCOMING EVENTS:

- Public Star Party - June 12*
- Local Star Party - June 13*
- EVAC Monthly Meeting- June 19*
- Deep Sky Party - June 20*
- Check out all of the upcoming club events in the Calendars on page 9*

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Evac This Month

We have a first for our June 19 meeting. Our speaker is Tom Field, who is an expert on amateur spectroscopy. He will be our first webcast speaker. Tom lives in Seattle, but will be presenting via GoTo Meeting. Dan and I have tested the setup, and it should be an exciting and fun

If It's Clear...

by Fulton Wright, Jr. Prescott Astronomy Club

June 2015

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. All times are Mountain Standard Time.

On Monday, June 1, after about 7:45 PM, notice that Venus is in line with Castor and Pollux.

On Tuesday, June 2, at 7:46 PM (8 minutes after sunset), the full Moon rises, spoiling any chance of seeing faint fuzzies for the night.

On Wednesday, June 3, you can see some events with Jupiter's moons. Here is the schedule:

07:39 PM Sunset (Ganymede is in front of Jupiter).
07:47 PM Io goes in front of Jupiter.
08:55 PM Ganymede appears from in front of Jupiter.
08:55 PM Io is near the center of Jupiter.
08:55 PM Io's shadow falls on Jupiter (1 shadow).
09:56 PM Ganymede's shadow falls on Jupiter (2 shadows).
09:56 PM Io's shadow is near the center of Jupiter.
10:04 PM Io appears from in front of Jupiter.
11:11 PM Io's shadow leaves Jupiter (1 shadow).
11:30 PM Ganymede's shadow is near the center of Jupiter.
11:50 PM Jupiter sets.

On Tuesday, June 9, the Moon is at last quarter phase and rises at 1:09 AM (Wednesday).

On Wednesday, June 10, you can see some events with Jupiter's moons. Here is the schedule:

09:33 PM Ganymede moves in front of Jupiter.
09:46 PM Io moves in front of Jupiter.
10:09 PM Io moves behind Ganymede (while both are in front of the planet. This will be very hard to observe.)
10:51 PM Io's shadow falls on Jupiter.
11:25 PM Jupiter sets.

evening. Hope to see you there.

Keep looking up..

Claude

On Monday, June 15, it is new Moon and you have all night to hunt for faint fuzzies.

On Sunday, June 21, it is the first day of summer, the summer solstice. This longest day of the year will give you 14 hours and 28 minutes of daylight. That means less night to enjoy our favorite hobby.

On Tuesday, June 23, the Moon is at first quarter phase and sets at 12:21 AM (Wednesday).

On Thursday, June 25, you can see some events with Jupiter's moons. Here is the schedule:

07:24 PM Europa's shadow falls on the planet. (Europa is already in front of the planet.)
07:47 PM the Sun sets.
08:26 PM Europa appears from in front of the planet.
09:53 PM Io passes behind Europa. (This is the second to last, easy to see, mutual event with Jupiter's moons for the next 6 years.)
10:14 PM Europa's shadow leaves Jupiter.
10:34 PM Jupiter sets.

On Tuesday, June 30, about 9:00 PM, Jupiter and Venus are about 20 arc-minutes from each other. Venus shows a crescent phase. Jupiter has Europa, Io, and Callisto lined up on one side and Ganymede far away on the other. The whole show should be visible in one field of view of a small (3 inch) telescope.

Interesting Double Stars in Bootes

Over Bootes is a double star wonderland and well placed in June's night sky. Let's look at five double star systems, in order of right ascension, that stand out from the Herdsman's flock. First up is a two for one affair as both can fit in a low power field. **Kappa and Iota Bootis** are in the far northern reaches of Bootes just five degrees west of Alkaid, the star at the end of the Big Dipper's handle. Located at 14h 13m +51° 47' (SAO 29045) Kappa is an easy split in a 70mm Ranger at 26x. The components are comprised of 4.5 and 6.6 magnitude stars separated by 13.5". Kappa isn't a true binary, but an optical pair – a chance alignment of two unrelated stars. Still, its blue secondary makes for a pleasant looking faux double star. If you scoot your scope a little west you should sweep up Iota Bootis, another wide double at 14h 16m +51° 22' (SAO 29071). Both doubles can be accommodated in a 0.8° field. Iota's components are 4.8 and 8.4 magnitude stars generously separated by 38.8". Even 10x70 binoculars can split Iota. Interestingly, the pair's primary and secondary are both yellow and blue respectively and have opposed position angles.

Next up at 14h 45m +27° 4' (SAO 83500) is **Izar** (Epsilon Bootis), the constellation's second brightest star. It's notoriously difficult to split cleanly as the components are both tight and differ by two magnitudes: AB 2.6, 4.7, separation 2.9",

position angle 339°. When you peer at this pair, consider they are separated by 230 Astronomical Units and circle each other in a period of 3000 years. A CPC-11 had difficulty splitting them at 90x. Various degrees of success can be achieved with powers of 165x – 200x depending on seeing conditions. This is definitely a good double to test for seeing conditions and accessing optics!

39 Bootis: 14h 49.7m +48° 43' (SAO 45231) AB 6.3, 6.7, separation 2.7" position angle 46°. This double star is located about midway between the Kappa/Iota pairs and Beta Bootis at the tip of the "kite" asterism of Bootes. A CPC-11" telescope splits this equal magnitude pair at 90x but 165x is far more convincing for this yellow pair.

Mu Bootis: 15h 24m +37° 21' (SAO 64686). This is a wonderful triple star. It's a 4.3 magnitude star easily seen with the naked eye and makes a shallow triangle with Beta and Delta Bootis. The AB components are so wide (108.9") they can be split in 10x70 binoculars. In a low power telescope it appears simply as a pair of stars. But boost the power to 100x and B becomes BC, a delicate nearly equal magnitude pair of eyes staring back at you! This is a stunning triple star. It may not be as impressive as other brighter triples like Beta Monocerotis but maintains a subtle dignity nevertheless. AB 4.3, 6.5, separation 108.9", position angle 171°. BC 6.9, 7.5, separation 2.3", position angle 08°. Don't miss this one!

***FULL MOON ON JUNE 2 AT 12:19**

LAST QUARTER MOON ON JUNE 9 AT 11:42

NEW MOON ON JUNE 16 AT 10:05

FIRST QUARTER MOON ON JUNE 24 AT 07:03

Nasa's Wise Spacecraft Discovers the Most Luminous Galaxy in Universe

Nasa Jet Propulsion Laboratory



A remote galaxy shining with the light of more than 300 trillion suns has been discovered using data from NASA's Wide-field Infrared Survey Explorer (WISE). The galaxy is the most luminous galaxy found to date and belongs to a new class of objects recently discovered by WISE -- extremely luminous infrared galaxies, or ELIRGs.

"We are looking at a very intense phase of galaxy evolution," said Chao-Wei Tsai of NASA's Jet Propulsion Laboratory in Pasadena, California, lead author of a new report appearing in the May 22 issue of *The Astrophysical Journal*. "This dazzling light may be from the main growth spurt of the galaxy's black hole."

The brilliant galaxy, known as WISE J224607.57-052635.0, may have a behemoth black hole at its belly, gorging itself on gas. Supermassive black holes draw gas and matter into a disk around them, heating the disk to roaring temperatures of millions of degrees and blasting out high-energy, visible, ultraviolet and X-ray light. The light is blocked by surrounding cocoons of dust. As the dust heats up, it radiates infrared light.

Immense black holes are common at the cores of galaxies, but finding one this big so "far back" in the cosmos is rare. Because light from the galaxy hosting the black hole has traveled 12.5 billion years to reach us, astronomers are seeing the object as it was in the distant past. The black hole was already billions of times the mass of our sun when our universe was only a tenth of its present age of 13.8 billion years.

The new study outlines three reasons why the black holes

in the ELIRGs could have grown so massive. First, they may have been born big. In other words, the "seeds," or embryonic black holes, might be bigger than thought possible. "How do you get an elephant?" asked Peter Eisenhardt, project scientist for WISE at JPL and a co-author on the paper. "One way is start with a baby elephant."

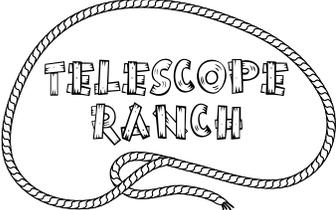
The other two explanations involve either breaking or bending the theoretical limit of black hole feeding, called the Eddington limit. When a black hole feeds, gas falls in and heats up, blasting out light. The pressure of the light actually pushes the gas away, creating a limit to how fast the black hole can continuously scarf down matter. If a black hole broke this limit, it could theoretically balloon in size at a breakneck pace. Black holes have previously been observed breaking this limit; however, the black hole in the study would have had to repeatedly break the limit to grow this large. Alternatively, the black holes might just be bending this limit.

"Another way for a black hole to grow this big is for it to have gone on a sustained binge, consuming food faster than typically thought possible," said Tsai. "This can happen if the black hole isn't spinning that fast." If a black hole spins slowly enough, it won't repel its meal as much. In the end, a slow-spinning black hole can gobble up more matter than a fast spinner. "The massive black holes in ELIRGs could be gorging themselves on more matter for a longer period of time," said Andrew Blain of University of Leicester in the United Kingdom, a co-author of this report. "It's like winning a hot-dog-eating contest lasting hundreds of millions of years."

More research is needed to solve this puzzle of these dazzlingly luminous galaxies. The team has plans to better determine the masses of the central black holes. Knowing these objects' true hefts will help reveal their history, as well as that of other galaxies, in this very crucial and frenzied chapter of our cosmos. WISE has been finding more of these oddball galaxies in infrared images of the entire sky captured in 2010. By viewing the whole sky with more sensitivity than ever before, WISE has been able to catch rare cosmic specimens that might have been missed otherwise.

For more information on WISE, visit:

<https://www.nasa.gov/wise>



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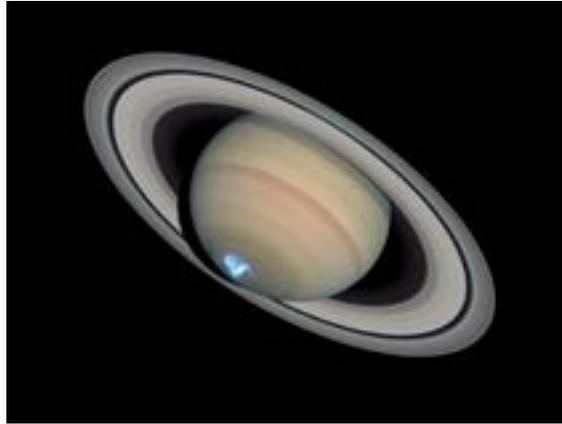
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Dobsonian Telescope For Sale

In April of 1992 I bought a dobsonian telescope with a 17.5" mirror from Coulter Optical. They are no longer in business. I paid \$1239.13 for the telescope. (Tax incl.) I have enjoyed using it but no longer have the means to transport it to a dark sky. The telescope needs to be used by someone who can get full use out of it so I am ready to bid farewell. I have the original operating guide. Some of the specifications are as follows:

- Mirror Diameter = 17.5
- Mirror Focal Length = 78.85
- Obscuration diameter = 4.25
- Focal ratio F/# = 4.5

I have just the original eyepiece that came with it. I never bought any extra eyepieces or filters. The overall condition of the telescope is good, but the mirror has never been cleaned. If you'd like to hear more about it, you may e-mail me. You can also leave a message at 480-483-3071. I will call back as soon as I get a chance.

Fred Marderness (reednote@yahoo.com)

Upcoming Meetings

June 19

July 17

August 21

September 16

October 16

November 20

December 18

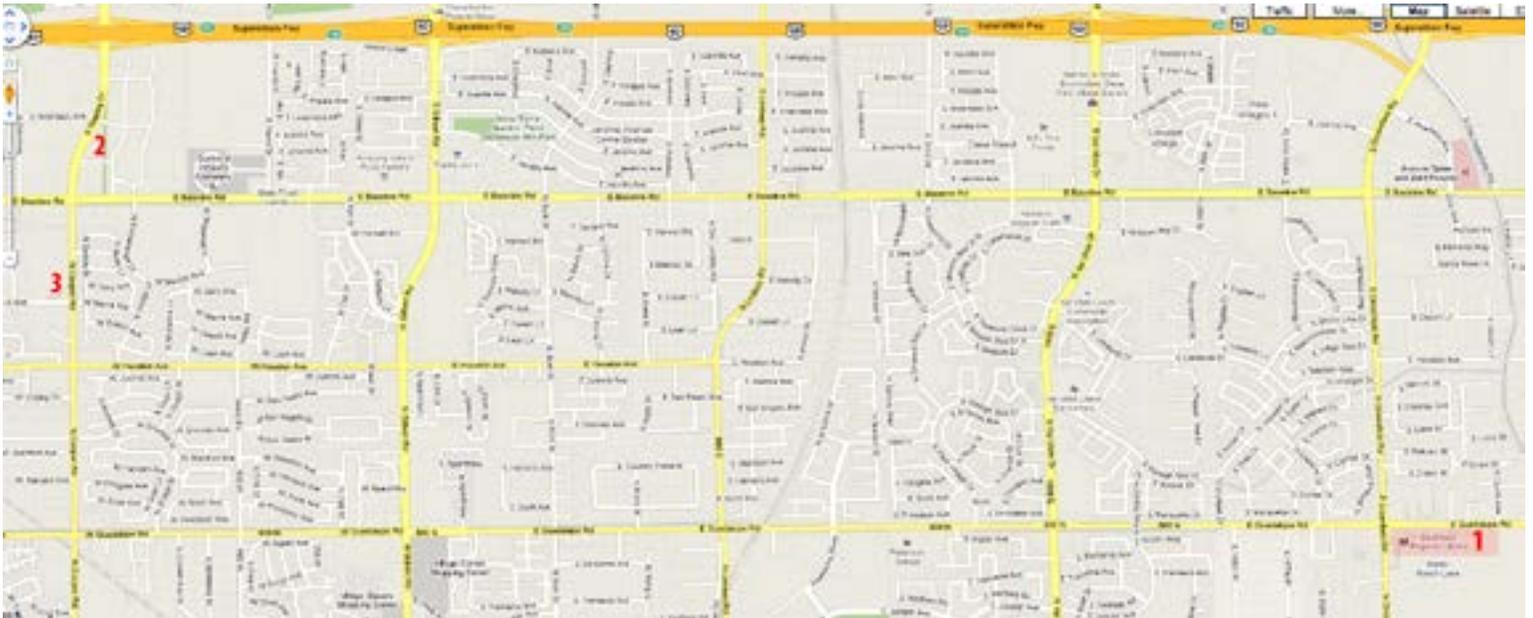
January 15

The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

All are welcome to attend the pre-meeting dinner at 5:30 pm. We meet at Old Country Buffet, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, just south of US60.

Visitors are always welcome!



2

Old Country Buffet
1855 S. Stapley Drive
Mesa, Az. 85204

1

Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234



JUNE 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

June 12 - Public Star Party

June 19 - EVAC Monthly Meeting

June 13 - Local Star Party

June 20 - Deep Sky Party

June 15 - Explore the Night Sky

JULY 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	23	24	25	26	27
28	29	30				

July 10 - Public Star Party

July 18 - Deep Sky Party

July 11 - Local Star Party

July 20 - Explore the Night Sky

July 17 - EVAC Monthly Meeting

East Valley Astronomy Club -- 2013 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

- New Member
 Renewal
 Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

- | | |
|---|---|
| <input type="checkbox"/> \$30.00 Individual January through March | <input type="checkbox"/> \$22.50 Individual April through June |
| <input type="checkbox"/> \$35.00 Family January through March | <input type="checkbox"/> \$26.25 Family April through June |
| <input type="checkbox"/> \$15.00 Individual July through September | <input type="checkbox"/> \$37.50 Individual October through December |
| <input type="checkbox"/> \$17.50 Family July through September | <input type="checkbox"/> \$43.75 Family October through December |
- Includes dues for the following year*

Renewal (current members only):

- \$30.00 Individual**
 \$35.00 Family

Name Badges:

- \$10.00** Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

- Payment was remitted separately using PayPal
 Payment was remitted separately using my financial institution's online bill payment feature

Name:

Phone:

Address:

Email:

City, State, Zip:

- Publish email address on website

URL:

How would you like to receive your monthly newsletter? (choose one option):

- Electronic delivery (PDF) *Included with membership*
 US Mail **Please add \$10 to the total payment**

Areas of Interest (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> General Observing | <input type="checkbox"/> Cosmology |
| <input type="checkbox"/> Lunar Observing | <input type="checkbox"/> Telescope Making |
| <input type="checkbox"/> Planetary Observing | <input type="checkbox"/> Astrophotography |
| <input type="checkbox"/> Deep Sky Observing | <input type="checkbox"/> Other |

Please describe your astronomy equipment:

Would you be interested in attending a beginner's workshop? Yes No

How did you discover East Valley Astronomy Club?

PO Box 2202
Mesa, AZ 85214-2202
www.evaconline.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

The Observer is the official publication of the East Valley Astronomy Club. It is published monthly and made available electronically as an Adobe PDF document the first week of the month. Printed copies are available at the monthly meeting. Mailed copies are available to members for a slight surcharge to offset printing and mailing expenses.

Please send your contributions, tips, suggestions and comments to the Editor at: news@evaonline.org Contributions may be edited. The views and opinions expressed in this newsletter do not necessarily represent those of the East Valley Astronomy Club, the publisher or editor.

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www.evaonline.org

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PO Box 2202
Mesa, Az. 85214-2202

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