

THE OBSERVER

East Valley Astronomy Club

From the Desk of the President

by David Douglass

My wife and I like to take a walk each day. As the summer heat grows, we have shifted to making it a morning walk. The temperature is about 20 degrees cooler than in the evening.

Each morning, about 4:45 a.m., we begin. And there to greet us each morning are two bright objects in the eastern pre-dawn sky. Of course, these would be Venus and Jupiter. What a beautiful sight.

And with summer, come vacations, and travel to cooler locations for viewing. Of course, the summer sun delays our viewing until later in the evening, either reducing our observing hours, or shifting them, well into the early morning hours. Even as the monsoon season clouds our evening skies, if you are patient and check back late in the evening,

or early morning hours, the skies do sometimes open to us.

Jan and I will be traveling this summer. We will miss the July and August meetings. Ed Thomas, our Vice-President, will be running the meetings during my absence.

Jan and I will be in Oregon during August. The Oregon Star Party is Aug 14-19, and we are registered to attend. It will be interesting to see what their dark skies look like. My understanding is that everyone who has attended before always seems to enjoy their outing. I will report back what I find.

So far, 2012 has been a great year for EVAC and the astronomy world. We have had eclipses, transits, equipment upgrades at GRCO, and the (Howard Israel Memorial) Chandler Solar System Walk is being dedicated in

Continued on page 5

The Backyard Astronomer

Double Solar Whammy in Gold Canyon

by Bill Dellinges

Amateur astronomers in the Gold Canyon area had back to back monthly solar events to share with the public this past May and June.

First up was the May 20th partial solar eclipse. Though the annularity path was in northern Arizona, the Phoenix metro area still saw the moon take an 83% bite out of the sun. In attendance were Bill Shaheen (72mm refractor), Henner Fahrenbach (5" SCT), Kathleen Audette (4" SCT), and yours truly, Bill Dellinges (80mm Lunt HA). Though hot and not publicized, we snagged about 25 members of the public who

hadn't a clue an eclipse was taking place. They were given quite an astronomy lesson that day. We were set up around the corner from the Basha's supermarket in Gold Canyon in order to be facing west for the best views. Had we been in front of the store, I'm sure we would have had many more viewers.

It was exciting to see the moon take the first bite out of the sun at 5:30pm. We stayed until mid eclipse at about 6:38pm. When I got home around sunset, the dusty atmosphere allowed me to see naked eye, a partially eclipsed sun sink

Continued on page 2

UPCOMING EVENTS:

Public Star Party - July 13

Local Star Party - July 14

General Meeting - July 20

Deep Sky Observing - July 21

Check out all of the upcoming club events in the Calendars on page 8

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The Backyard Astronomer

Continued from page 1 below the horizon – what a sight!

We returned to the scene of the crime on June 5th for the transit of Venus across the sun. This time we had spread the word around a bit that we'd have telescopes set up for the event. Also, I had determined on a recon mission that we would indeed be able to view toward the west unimpeded if stationed near the supermarket. We did so and were rewarded with a much larger crowd than our eclipse outing.

The scope lineup that day was again Henner, Kathleen, and myself – this time with the Lunt and a Questar 3.5". Bill Shaheen didn't bring his 72mm refractor this time but pulled off a technical wonder by displaying the transit on his laptop – the telescope was tracking the sun from his backyard 20 miles away. For this event, EVAC's Jerry Hyman (8" SCT) and Keith Kruger (8" SCT) joined in the fun.

I had missed the last Venus transit in 2004 (and 1882!) so this was, much to my surprise, my first Venus transit. I found that hard to believe but I guess I was confusing it with Mercury transits which happen more frequently (12 times a century). It must have been one of those I'd seen before.

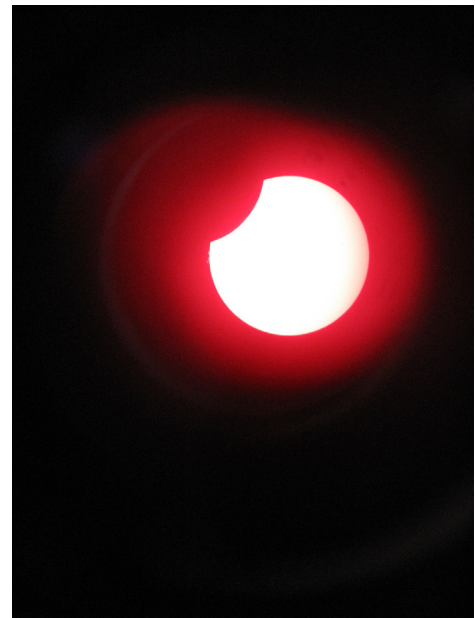
We all waited anxiously for first contact at 3:05pm. It was late! Did the guy who figured the Hubble Space Telescope mirror calculate this transit?! Ah-ha! Finally, there it was! The tiniest little bite began to show at ingress. I had thought that part of the transit would be quick but it took a long time to reach 2nd contact.

Only later, after reading a S&T account of the 2004 transit did I learn that egress (they didn't see ingress) took 20 minutes! No one told me that! It was not mentioned in the June, 2012 S&T. Anyway, I'm glad it took so long because I found that part of the transit the most fascinating.

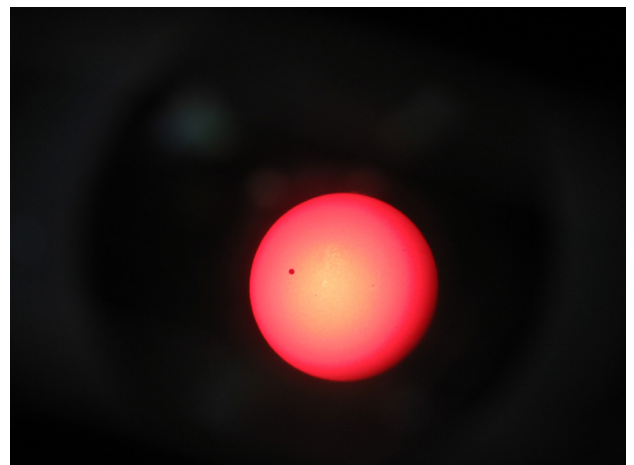
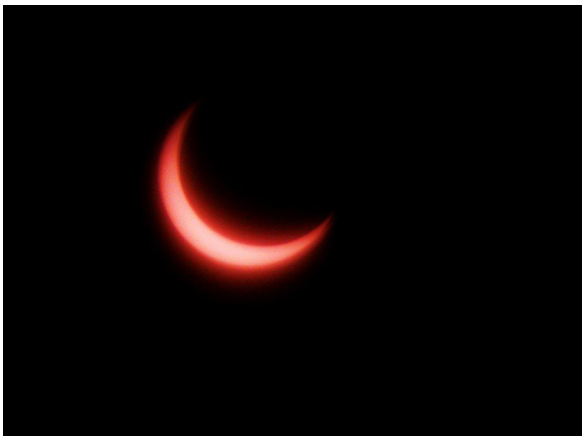
We got quite a crowd. The array of telescopes no doubt caught the attention of shoppers and the curious. My clicker indicated 86 persons looked through my two telescopes. It was a fun event and I think we blew some minds amongst the public that day. We jokingly told them we'd be back in 2117 for the next transit.



Setting eclipse by Kathleen Audette



Annular eclipse photos by Bill Dellenges



Venus transit by Bill Dellenges

The Largest Galaxy - IC 1101

by Henry De Jonge IV

Introduction

Awhile back in May 2008 I did an article on the giant elliptical M87 and noted that it was several million light years in size. This is big enough to hold us and the 2.2 Mly distant M31 in a single object! This was truly astounding. Now let's discuss a galaxy that is even more amazing to think about and could easily contain M87 as well as us and the distant M31 inside with room to spare! It is generally considered to be the largest galaxy we presently know about in our Universe.

IC 1101 is a supergiant elliptical galaxy at the center of the relatively nearby Abell 2029 galaxy super cluster. It is also known as catalog designations UGC 9752 and PGC 54167.

Giant Ellipticals and Clusters

Elliptical galaxies have a relatively simple appearance, sort of a football shape, but they are now known to be both complex and varied in many of their characteristics. For example they are the brightest and largest galaxies in the Universe and yet also some of the dimmest. Ellipticals are usually smooth, round, and somewhat featureless galaxies, (compared to spirals) with their light much more concentrated towards their centers than in spirals. They are most often lacking in cool gas and have few young stars. It has slowly been realized that the large bright ellipticals often have a different structure and other differences than the smaller and fainter ellipticals.

Ellipticals, (especially large ones) are usually a majority in rich galaxy clusters and the largest are called cD galaxies, (in a modified form of the Hubble classification) which are found in the densest parts, (usually in or near the center) of clusters. Sometimes they are called super giant elliptical or central dominant galaxies. They are usually 1-2 orders of magnitude more luminous than a regular galaxy like the Milky Way and can be 1-2 orders of magnitude more massive. Often they are surrounded by very large diffuse halos for hundreds of Kpc. Such large ellipticals show little global organized stellar motion such as rotation and the stars are often in random motions. They are also seen very often with an AGN, (all are thought to contain SMBHs at their centers) and are generally radio loud.

As noted, these cD galaxies are most often found at the centers of rich regular clusters which are also the bottom of the gravitational potential well, and they seem to exist only in the company of other galaxies. For example they are not found in sparsely populated regions of space with less than 1 galaxy per cubic Mpc. These cD galaxies in the centers of clusters are usually a bit different from the other members. They are usually the brightest, the most massive and the dominant members of the cluster. About 20% of rich clusters of galaxies contain a dominant cD central galaxy and some even have more than one cD galaxy in the center. In addition more than half of these cD galaxies have multiple nuclei that move differently than the whole galaxy and are indicative of past galactic mergers. They often have an unusually high number of galactic clusters about them which also implies galactic

merger activity and accretion. Of course being in the center usually increases the chances of galactic encounters with the other members of the cluster.

These huge galaxies are thought to have grown by a series of mergers and accretions of smaller galaxies and DM throughout their lives and are in a late stage of galactic evolution. Currently there are at least 3 theories attempting to explain the growth and properties of these enormous cD galaxies. The most accepted theory is that these galaxies form via galactic cannibalism. Observationally the nearby intergalactic space around them is often relatively empty of other galaxies but can contain a large amount of dust and gas, thought to be the result of its galactic cannibalism.

In regards to the cluster in which it resides, Abell 2029, (A2029) is a very large cluster of galaxies about 315 Mpc distant from us, (or about 1,027 Mly) in the constellation Virgo. It is a much studied cluster due to its relatively close proximity and like many clusters emits copious x-rays. It is considered an unusually regular cluster for its size especially in overall structure and by many other properties such as DM distribution, ICM, (intra cluster medium) temperature profile, and x-ray distribution. It is modeled as a "relaxed" cluster since it is considered close to hydrostatic equilibrium. The total mass of the cluster including DM is estimated to be 10¹³ to 10¹⁴ solar masses. Abell 2019 is estimated to contain over 100 trillion stars and this cluster glows with the luminosity of over 2,000,000,000,000 suns. As mentioned earlier, IC 1101 lies very near the center of this cluster and emits over 20% of the visible light from the cluster.

Usually in most clusters thermal x-ray gas fills the ICM and traces the gravitational potential. Abell is observed to be a cluster where the intracluster gas has begun to slowly cool, either due to age or re-cooling after past merger activity. However this observation and its interpretation are still under debate. It is generally agreed upon though that galaxy clusters like Abell 2029, (specifically with large mass to light ratios) contain a large amount of DM.



Abell 2029 cluster on the right with IC 1101 near the center and an X-ray image of Abell 2029 on the left.

Continued on page 4

The Largest Galaxy - IC 1101

Continued from page 3



A larger view of super cluster Abell 2020 with IC 1101 in the center

The Limits of Growth

The limiting size of galaxies is not known nor is it well understood and many questions remain. There are several models that attempt to explain galaxy growth but none that are complete, although all are modeled as growing from smaller to larger. The exact role of DM is still unknown, as is the role of SN, and the BHs at their centers. The centers of such giant ellipticals is thought to be very hot, (usually studied in x-rays), much hotter than in disk systems, so that the gas does not cool down enough to allow effective star formation. This mechanism is thought to be a major influence on galaxy growth and scaling. However DM obeys only the law of gravity and thus its role is still debated in this process. We know of several other cD type giant galaxies, (of a slightly smaller size) in clusters but the maximum limits of galactic growth are still undetermined and most likely still unobserved.

IC 1101 Overview

Again, IC 1101 is classified as a cD galaxy with a large halo of stars. This classification indicates that the galaxy is unusually large and diffuse. It is estimated to be about 5.6- 6 Mly in diameter, (Vs the 120,000 ly for the Milky Way) which makes it about 60 times larger than the Milky Way.

It is currently a very active radio galaxy with observed x-ray emission. The fact that it lies in the gravitational potential center of Abell has been verified by gravitational lensing which has outlined the cluster mass contours as well as optical and x-ray observations. More studies of the mass and light observations, (distributions) need to be done regarding

cluster structure as related to such giant ellipticals.

There is little doubt that the large gravitational power of IC 1101 and its central SMBH, (s) influences the surrounding cluster members and ICM. Its great luminosity in both visible light and x-rays also influences the ICM to a very high degree.



IC 1101 on the right as relative to our Milky Way, (the smallest galaxy on the left) and M31

Conclusions

How big can galaxies grow? Are there limits to growth determined by the initial conditions, (DE, DM, quantum fluctuations, inflation, etc) of our Universe? We know of other giant ellipticals in other super clusters and clusters, so does this imply a sort of power law to growth? A power law would indicate that this growth is scale free, however we may be biased in our observations due to what we can observe. There are still many questions regarding the role of DM in galaxy birth and growth. Did such giant galaxies form from DM seeds or by gradual accretion and merger activity, or both?

By continued study of IC 1011 we can learn about how galaxies grow, how they cluster, and how DM influences their evolution. It can also shed light on cluster growth and evolution. Is there a relationship about the central cD galaxy in such clusters with the mass of the entire cluster, (or "core" of the cluster) similar to the relationship between galaxy bulges and their central SMBH?

The study of these super giant galaxies will also continue to show us their complex and sometimes varied stellar motions and structure when compared to other elliptical and giant elliptical galaxies.

In the meantime it is just wonderful to ponder the sheer immensity and even the existence of IC 1101 as a single galaxy!

July Guest Speaker: Bernard Miller

EVAC member Bernard Miller is an Application Engineer at Synopsys, Inc., a maker of Design Automation Software for use in designing, developing, simulating, and fabricating Application Specific Integrated Circuits (ASICs). Bernard has been in his present position for the last seventeen years and prior to that was a design engineer and consultant at Hughes Aircraft, GE Aerospace, Zycad Corporation, and Intel.

Bernard became interested in astronomy about four years ago after helping his son with an astronomy assignment at school. After a year of learning the basics and observing at the local star parties and the AASP and Messier Marathon, he caught the astrophotography bug and has been doing that for the last three plus years. Bernard has had over a dozen pictures published in Astronomy Magazine and Sky and Telescope online picture of the day website and newsletter and has had two pictures published in Astronomy Magazine. You can see a sample of his astrophotography work at <http://www.azstarman.net>.

Bernard's presentation will focus on the image processing work flow from calibration, registering, and stacking the raw frames in CCDStack. I will cover how to generate and create

master dark, bias, and flat frames for image calibration. I will then discuss the process of image calibration, registration, stacking, and preprocessing of the L and RGB images to produce a master Luminance and RGB image for final processing in Photoshop. I will also discuss a technique for combining long and short duration images to create high dynamic range images of targets like M42 and M31.

Part two of the presentation will take place prior to the August meeting and will focus on the Photoshop work flow. I will start with the L and RGB images from part one and go through the image processing flow for combining the L and RGB images into a final image for printing and/or posting on the WEB. Topic will include sharpening, layer mask techniques, color boosting, gradient removal, noise reduction, and star fixing and enhancement.



From the Desk of the President

Continued from page 1 a few days. And all that does not even consider the many school star parties hosted by our Events Coordinator, and the many educational events hosted by GRCO. And the year is only half over!

Hopefully, everyone will have a good summer. There is so much to see, and do.

But remember, to "see" the really important and most beautiful things, we have to "Keep Looking Up".



● **FULL MOON ON JULY 3 AT 11:53**

◐ **LAST QUARTER MOON ON JULY 10 AT 18:49**

○ **NEW MOON ON JULY 18 AT 21:25**

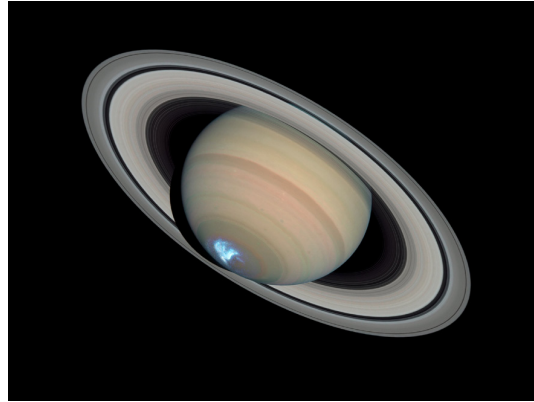
◑ **FIRST QUARTER MOON ON JULY 26 AT 01:57**

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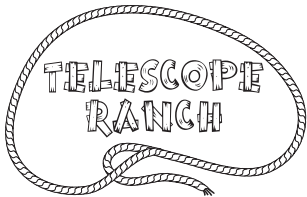


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Upcoming Meetings

July 20

August 17

September 20

October 19

November 16

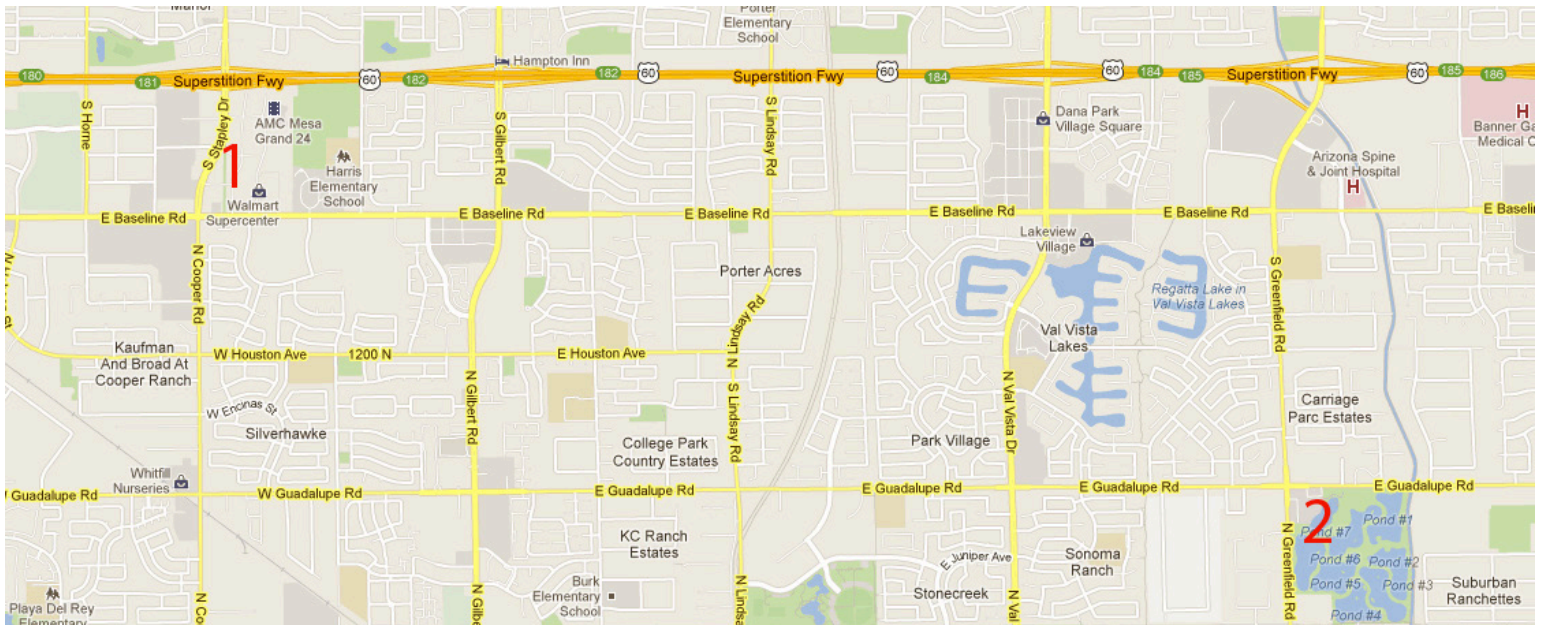
December **Holiday Party**

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!



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

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



JULY 2012

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	31				

July 13 - Public Star Party & SkyWatch at Riparian Preserve **July 20** - General Meeting at SE Library

July 14 - Local Star Party at Boyce Thompson **July 21** - Deep Sky Observing Night

AUGUST 2012

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		

August 10 - Public Star Party & SkyWatch

August 17 - General Meeting at SE Library

August 11 - Local Star Party at Boyce Thompson

August 18 - Deep Sky Observing Night

East Valley Astronomy Club -- 2012 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.

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC") I hereby affirm that my family and I agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

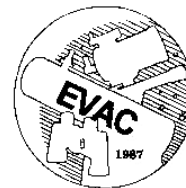
I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Please print name here

Date



Please sign name here

**PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org**

How Many Discoveries Can You Make in a Month?

by Dr. Tony Phillips

This year NASA has announced the discovery of 11 planetary systems hosting 26 planets; a gigantic cluster of galaxies known as “El Gordo;” a star exploding 9 billion light years away; alien matter stealing into the solar system; massive bullets of plasma racing out of the galactic center; and hundreds of unknown objects emitting high-energy photons at the edge of the electromagnetic spectrum.

That was just January.

Within NASA’s Science Mission Directorate, the Astrophysics Division produces such a list nearly every month. Indeed, at this very moment, data is pouring in from dozens of spacecraft and orbiting observatories.

“The Hubble, Spitzer, Chandra, and Fermi space telescopes continue to make groundbreaking discoveries on an almost daily basis,” says NASA Administrator Charlie Bolden .

NASA astrophysicists and their colleagues conduct an ambitious research program stretching from the edge of the solar system to the edge of the observable Universe. Their work is guided in large part by the National Research Council’s Decadal Survey of Astronomy and Astrophysics, which identified the following priorities:

Finding new planets—and possibly new life—around other stars.

Discovering the nature of dark energy and dark matter.

Understanding how stars and galaxies have evolved since the Big Bang.

Studying exotic physics in extreme places like black holes.

Observing time on Hubble and the other “Great Observatories” is allocated accordingly.

Smaller missions are important, too: The Kepler spacecraft, which is only “medium-sized” by NASA standards, has single-

handedly identified more than 2300 planet candidates. Recent finds include planets with double suns, massive “super-Earths” and “hot Jupiters,” and a miniature solar system. It seems to be only a matter of time before Kepler locates an Earth-sized world in the Goldilocks zone of its

parent star, just right for life.

A future astrophysics mission, the James Webb Space Telescope, will be able to study the atmospheres of many of the worlds Kepler is discovering now. The telescope’s spectrometers can reveal the chemistry of distant exoplanets, offering clues to their climate, cloud cover, and possibilities for life.

That’s not the telescope’s prime mission, though. With a primary mirror almost 3 times as wide as Hubble’s, and a special sensitivity to penetrating infrared radiation, Webb is designed to look into the most distant recesses of the universe to see how the first stars and galaxies formed after the Big Bang. It



Artist’s concepts such as this one are based on infrared spectrometer data from NASA’s Spitzer Space Telescope. This rendering depicts a quadruple-star system called HD 98800. The system is approximately 10 million years old and is located 150 light-years away in the constellation Crater. Credit: NASA/JPL-Caltech/T. Pyle (SSC)

is, in short, a Genesis Machine.

Says Bolden, “We’re on track in the construction of the James Webb Space Telescope, the most sophisticated science telescope ever constructed to help us reveal the mysteries of the cosmos in ways never before possible.” Liftoff is currently scheduled for 2018.

How long will the list of discoveries be in January of that year? Stay tuned for Astrophysics.

For more on NASA’s astrophysics missions, check out <http://science.nasa.gov/astrophysics/>. Kids can get some of their mind-boggling astrophysics questions answered by resident Space Place astrophysicist “Dr. Marc” at <http://spaceplace.nasa.gov/dr-marc-space>.

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

If It's Clear...

by *Fulton Wright, Jr.*

Prescott Astronomy Club

JULY 2012

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is ½ degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

Now that comet C/2009 P1 (Garradd) has finally faded away, I hardly know what to do.

On Tuesday, July 3, at 7:47 PM (same time as sunset), the full Moon rises, spoiling and chance of hunting faint fuzzies for the night.

On Wednesday, July 4, after about 9:00 PM, you can see the terrestrial southeast of the Moon at its best. Libration tips that part toward us.

On Sunday, July 8, about 4:20 AM, you can see Venus (magnitude -4.5) about 1 degree from Aldebaran (magnitude 1).

On Tuesday, July 10, at 11:54 PM, the third quarter Moon rises.

On Sunday, July 15, between 4:00 and 5:00 AM, you can see 4 bright objects forming an upside down kite. The objects, top to bottom, are: Jupiter, magnitude -2; the Moon, magnitude -6. thin crescent phase; Aldebaran, magnitude 1; and Venus, magnitude -4.5, also crescent phase.

On Wednesday, July 18, it is new Moon and you have all night to hunt for faint fuzzies.

On Tuesday, July 24, from about 8:15 to 10:15 PM, you can see 4 bright objects grouped near the southwest horizon. The objects, top to bottom, are: Saturn, magnitude 1; Spica, magnitude 1; Mars, magnitude 1; and the Moon, magnitude -9.

On Wednesday, July 25, at 11:27 PM, the first quarter Moon sets.

Looking for that perfect weekend activity?

Why not resolve to getting involved?

Contact Dave Coshow to join the staff at GRCO

Email: grco@evaconline.org

Chandler Solar System Walk At Veterans Oasis Park Dedication Ceremony

Saturday, July 7, 2012, at 8:00 am

4050 E. Chandler Heights Road

Please join the family and friends of Howard Israel, as we dedicate the new Chandler Solar System Walk in his honor at Veterans Oasis Park.

The Chandler Solar System Walk is a celebration of nature and science spanning the perimeter of the lake to be enjoyed by students, families, and other park visitors. It is a lasting memorial to Howard and others like him who share the desire to cultivate a spirit of curiosity about the cosmos.

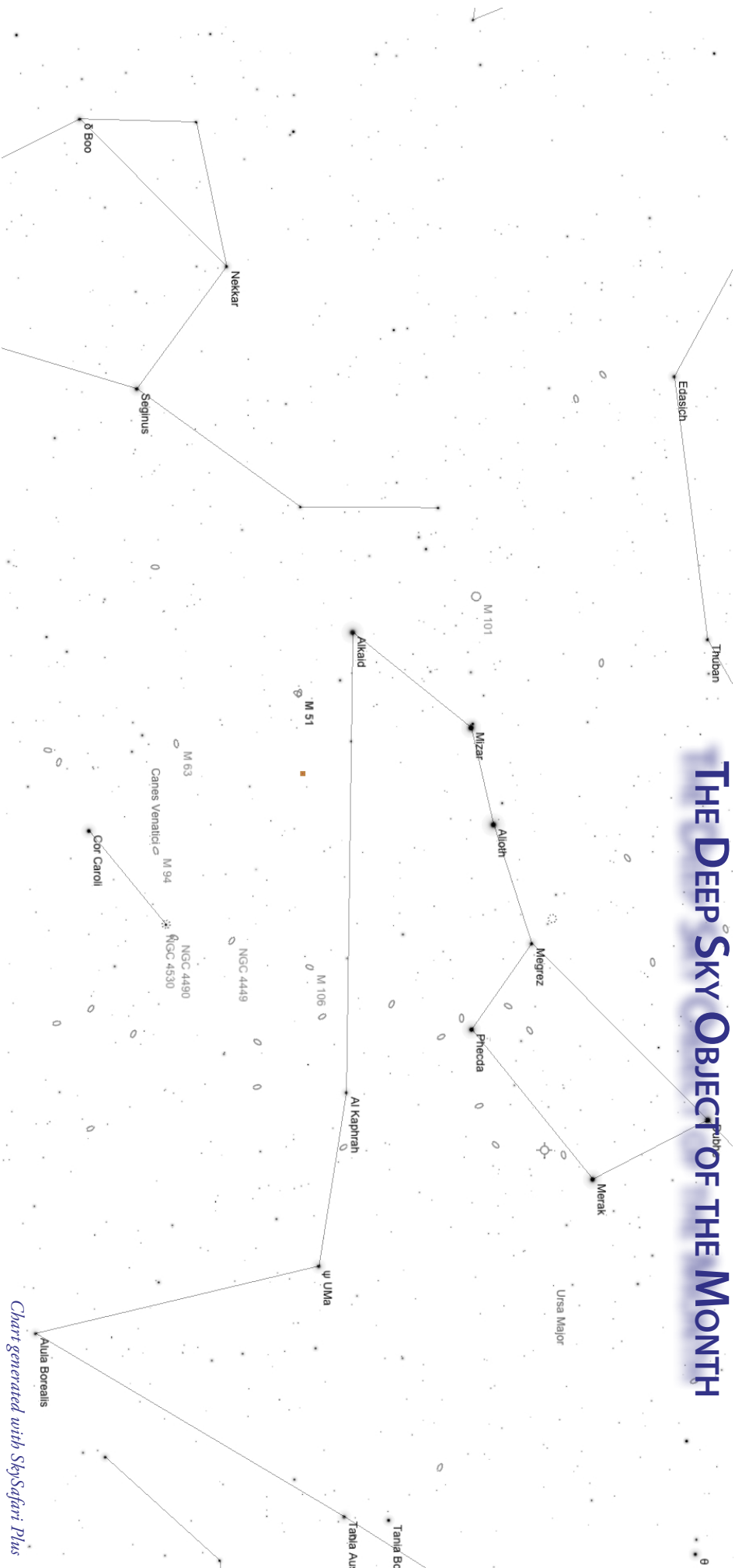
Please meet on the north side of the Environmental Education Center. The ceremony will be a short walk away, on the north side of the lake.

A reception will be held after the ceremony at the home of Craig & Sharyn Younger 2101 E. Palm Beach Dr., which is a short drive southwest of the park.

Maps will be available at the ceremony.

Please RSVP to chandersolarwalk@gmail.com

THE DEEP SKY OBJECT OF THE MONTH



Messier 51 is the famous “Whirlpool” galaxy in Canes Venatici. It is one of the most conspicuous and best-known spiral galaxies in the sky. M 51 is interacting with its much smaller neighbor, NGC 5195; the two galaxies may be seen with binoculars under very dark skies.

Charles Messier discovered M 51 on 13 October 1773, and described it as a “very faint nebula, without stars”. His friend Pierre Mechain discovered its companion, NGC 5195, in March 1781, and M 51 is mentioned in Messier’s 1781 catalog as follows: “It is double, each has a bright center, which are separated 4’ 35”. The two ‘atmospheres’ touch each other, the one is even fainter than the other.” Messier also added a sketch of the two “nebulae” in his personal copy of the catalog, confirming that he meant the designation M 51 to refer to the larger galaxy, NGC 5194. The smaller companion, NGC 5195, was later assigned its own catalog number by William Herschel: H.I.186, and is also sometimes referred to as M 51B.

The Whirlpool’s spiral pattern was not seen until 1845, when Lord Rosse discerned it in his 6-foot reflector at Parsonstown, Ireland. Lord Rosse made a very accurate painting of M 51; hence M 51 is sometimes referred to as Rosse’s Galaxy or Lord Rosse’s “Question Mark”. At first its spiral pattern was thought to confirm Laplace’s Nebular Hypothesis of solar system formation. This misconception was not dispelled until 1923, when it was finally recognized that spiral nebulae are in fact external galaxies, and much more remote than previous suspected.

Halton Arp included M 51 as No. 85, a “Spiral with Large High-Surface-Brightness Companion”, in his Catalogue of Peculiar Galaxies.

M51 (Whirlpool Galaxy, NGC 5194) Spiral Galaxy in Canes Venatici

RA: 13h 30m 24.79s Dec: +47° 07' 47.4" Size: 11.2' x 6.9' Magnitude: 8.39



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astronomy
to the people...



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