NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JUNE 2018

PRESIDENT'S NOTES

Spring into summer, it is June for goodness sake. Before I get on to this month's focus, remember Jupiter is up and well placed for viewing every night. By 2am, Saturn and Mars have come up to viewable heights, and the summer Milky Way is arching overhead. Hey, that does tie into what I wanted to write about, globular clusters.

MESSIER 3

Source: Craig Anderson

As much as the early spring is a time to look for galaxies, late spring/early summer is time to focus on globular clusters. There are about 125 globular clusters known in our galaxy, with many of them visible in small to moderately sized telescopes. Imaging through the telescope can extend that number greatly. The general description of a globular cluster would include saying that they are tightly packed, rotating balls, made up of hundreds of thousands of stars that are bound by shared gravity, where the stars interact gravitationally with each other. Nearly all matter in the clusters resides in the stars themselves, with no dusty or gaseous nebulae within or around the cluster. Observations of globular clusters associated with our galaxy and nearby galaxies, where we can resolve globular clusters, lead us to believe that they, in turn, orbit their host galaxy above and below the galactic plane, forming loose widely separated haloes around the galaxy. There is also mystery; many aspects are not fully understood. Are they, as they seem small clots of stars within the less clumped enormously of the host galaxy? Are they failed galaxies too small to hold stars beyond their cores? There are plenty of ideas and models and ongoing research beyond the beauty of globulars.

In late spring and early summer, we have a good view of some of that galactic halo and the globular clusters that inhabit it. I'm sure you've all seen a globular cluster or two, but have you made a night of touring through the globulars? Well, now is a good time to make the trip. I'll just give you one list in two colors. Those in black are bright clusters for smaller and moderate scopes, without fancy mounts. The red entries are fainter objects. It really adds to the enjoyment and learning experience to see these amazing objects one after another to reinforce their contrasts and similarities. Oh, and yes the astronomical league does have a globular cluster observing program, in case you were wondering.

Globular Cluster	RA	Dec	Constellation	Mag	Diameter (arc minutes)
Omega Centauri	13h 26m 47.24s	−47° 28′ 46.5″	Centaurus	3.68	55
M3	13h 42m 11.62s	+28° 22′ 38.2″	Canes Venatici	6.19	18
M5	15h 18m 33.51s	+02° 04′ 54.9″	Serpens	5.65	21.6
M13	16h 41m 41.37s	+36° 27′ 36.2″	Hercules	5.78	20
M53	13h 12m 55.07s	+18° 10′ 05.4″	Coma Berenices	7.61	13
M68	12h 39m 27.99s	−26° 44′ 38.6″	Hydra	7.84	11
M92	17h 17m 07.35s	+43° 08′ 09.4″	Hercules	6.44	14
NGC 4147	12h 10m 06.30s	+18° 32′ 33.5″	Coma Berenices	10.32	4.4
NGC 5466	14h 05m 27.29s	+28° 32′ 04.0″	Boötes	9.04	9
NGC 5634	14h 29m 37.23s	−05° 58′ 35.1″	Virgo	9.47	5.5
NGC 5694	14h 39m 36.29s	−26° 32′ 20.2″	Hydra	10.17	4.3
NGC 5824	15h 03m 58.63s	−33° 04′ 04.8″	Lupus	9.09	7.2
NGC 5897	15h 17m 24.50s	−21° 00′ 37.0″	Libra	8.53	11
NGC 6229	16h 46m 58.84s	+47° 31′ 39.9″	Hercules	9.39	4.5
Extracted from: https://en.wikipedia.org/wiki/List_of_globular_clusters					

Now get out there and stare.

At the June Meeting

Dr. Chad Bender studies exoplanets to improve our understanding of how planets and planetary systems form and evolve. He and colleagues are currently building a pair of spectrometers that will search close- by stars for Earth sized planets that might be capable of supporting life.

Dr. Bender received his Ph.D. in 2006. He is currently an Associate Astronomer at The University of Arizona's Steward Observatory

The first exoplanets discovered in 1993 paved the way for an astronomical revolution. The subsequent 25 years have revealed thousands of planets orbiting stars, with a diversity of characteristics not seen in our Solar System, nor even previously imagined. Over the past decade, astronomers have pushed detection sensitivities towards smaller and smaller planets and are now finally at the cusp of discovering Earth like planets around nearby stars. I will describe some of these discoveries, and the cutting-edge instrumentation and surveys that are finding them.

The June meeting will be held in the Student Union Building at Cochise College 901 N. Colombo Avenue, Sierra Vista at 7pm. We will take Chad to dinner at outback before the meeting. If you would like to join us for dinner please RSVP to BILL HOWARD (howardwj51@gmail.com)

Mark your Calendars

The University South Foundation and the Huachuca Astronomy Club will host a special guest talk by Seth Shostak of the SETI institute on Monday, November 5, 2018 at 7 pm in the Cochise College Student Union.

"If you think we're alone, you believe in miracles ..."

Seth claims to have developed an interest in extraterrestrial life at the tender age of ten, when he first picked up a book about the solar system. This innocent beginning eventually led to a degree in radio astronomy, and now, as Senior Astronomer, Seth is an enthusiastic participant in the Institute's SETI observing programs. He also heads up the International Academy of Astronautics' SETI Permanent Committee.

In addition, Seth is keen on outreach activities: interesting the public – and especially young people – in science in general and astrobiology in particular. He's co-authored a college textbook on astrobiology and has written three trade books on SETI. In addition, he's published more than 400 popular articles on science -- including regular contributions to both the Huffington Post and Discover Magazine blogs -- gives many dozens of talks annually and is the host of the SETI Institute's weekly science radio show, "Big Picture Science."

This talk is a special event (not a HAC meeting – that will take place the following Friday, Nov 9).

Welcome our new members

Frank Serrao of Cleveland Heights, Ohio joined the club in May. He is a frequent visitor to Arizona and looking to possibly relocate here.

This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

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Space Place Article **May 2018**

What Is the Asteroid Belt?

By Linda Hermans-Killiam

There are millions of pieces of rocky material left over from the formation of our solar system. These rocky chunks are called asteroids, and they can be found orbiting our Sun. Most asteroids are found between the orbits of Mars and Jupiter. They orbit the Sun in a doughnut-shaped region of space called the asteroid belt.

Asteroids come in many different sizes—from tiny rocks to giant boulders. Some can even be hundreds of miles across! Asteroids are mostly rocky, but some also have metals inside, such as iron and nickel. Almost all asteroids have irregular shapes. However, very large asteroids can have a rounder shape.

The asteroid belt is about as wide as the distance between Earth and the Sun. It's a big space, so the objects in the asteroid belt aren't very close together. That means there is plenty of room for spacecraft to safely pass through the belt. In fact, NASA has already sent several spacecraft through the asteroid belt!

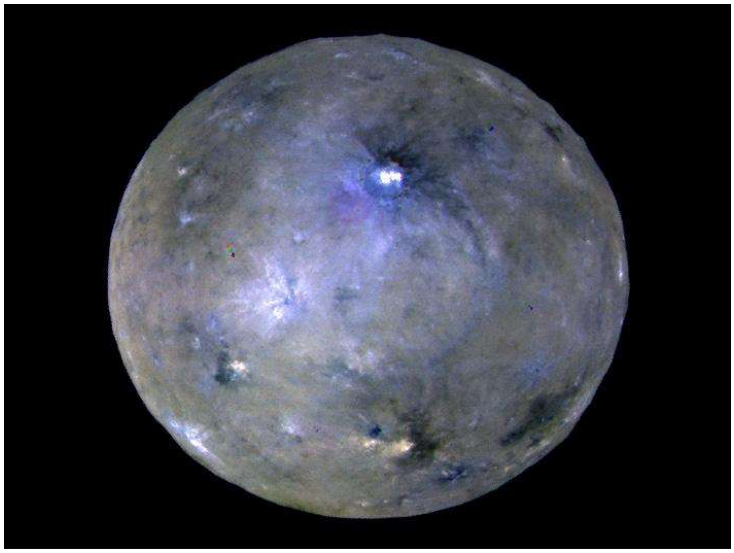
The total mass of objects in the asteroid belt is only about 4 percent the mass of our Moon. Half of this mass is from the four largest objects in the belt. These objects are named Ceres, Vesta, Pallas and Hygiea.

The dwarf planet Ceres is the largest object in the asteroid belt. However, Ceres is still small. It is only about 587 miles across—only a quarter the diameter of Earth's moon. In 2015, NASA's Dawn mission mapped the surface of Ceres. From Dawn, we learned that the outermost layer of Ceres—called the crust—is made up of a mixture of rock and ice.

The Dawn spacecraft also visited the asteroid Vesta. Vesta is the second largest object in the asteroid belt. It is 329 miles across, and it is the brightest asteroid in the sky. Vesta is covered with light and dark patches, and lava once flowed on its surface.

The asteroid belt is filled with objects from the dawn of our solar system. Asteroids represent the building blocks of planets and moons, and studying them helps us learn about the early solar system.

For more information about asteroids, visit: https://spaceplace.nasa.gov/asteroid

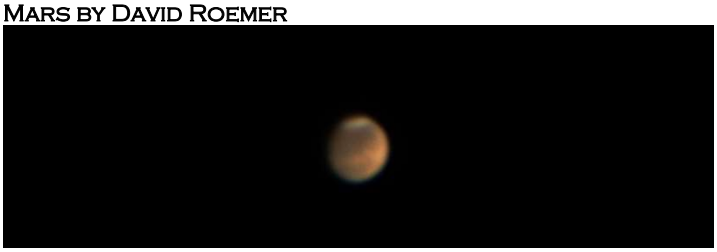


Caption: This image captured by the Dawn spacecraft is an enhanced color view of Ceres, the largest object in the asteroid belt. Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

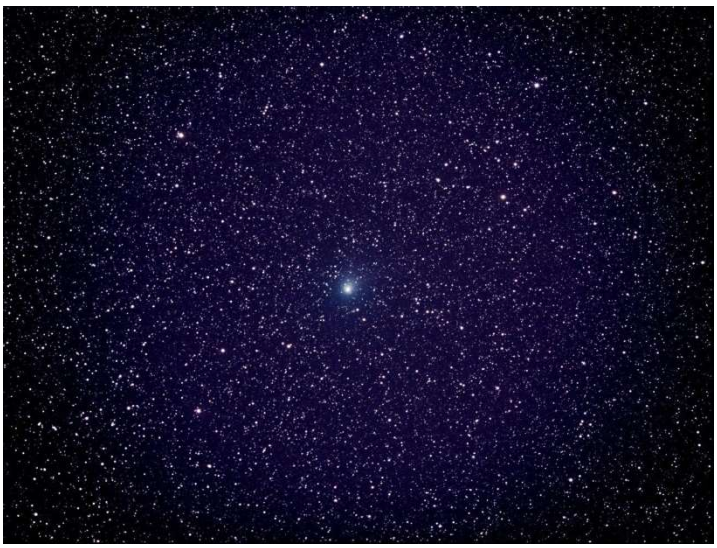
Pictures from HAC Members

M20 Trifid Nebula by David Roemer

Mars by David Roemer



Comet 2016 M1 PanSTARRS by David Roemer



JUPITER BY MIKE SHADE

M81 BODE'S GALAXY BY RICHARD PATTIE

WANT ADS

For Sale: Meade 10" 2120 OTA with HTMC

I bought it on Cloudy Nights from a guy in Wickenburg, had the secondary professionally cleaned at Starizona in Tucson. The OTA comes with either a Celestron 1.25 visual back or a 2" rotating visual back, an adjustable focus finder as shown in the picture, and a Vixen style dovetail bracket. Of course, there is also a front cover.

Asking $500

Contact Carl Swanson at (480)600-7353 or cswanson@gotsky.com

For Sale: Meade 10" LX200 classic telescope

In very good condition, with tripod, 120v AC and 12v DC power converters with 25' power cords, dew shield, 8x50 finder scope, electric focuser, piggy back bracket, and soft sided carrying case. Also includes a set of Meade CCD color filters, Meade CCD 3.3 focal reducer and CCD variable T-adapter. Plus some other equipment.

Asking $ 1,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

For Sale: Pier Tech electric telescoping pier with Lati-wedge made for the latitude of Sierra Vista

All the hardware, bolts, nuts, washers and plates are with the pier. Pier Tech can make new legs for it to make it correct for anywhere in the world. The pier and wedge have never been used and the only time the pier was out of the box was to take the photos. New today, the pier and wedge are $3,400. Asking $2,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

For Sale: Planewave CDK14 corrected Dall-Kirkham telescope.

Includes the OTA, new November 2014, optional truss rod shroud and optional upper dovetail and the accessories that were included with the telescope (primary to secondary spacing tool). There is NO FOCUSER the adapter for an Optec TCFS3i is included. I also have the factory wooden shipping crate. The telescope has been in use every clear night in the observatory in Sonoita. This is an outstanding instrument and a great imaging scope.

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Farpoint Astronomy http://www.farpointastro.com/
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HAC June/July Calendar of Events

SU	MO	TU	WE	TH	FR	SA
3 Jun	**4**	**5** Mercury in Superior Conjunction	**6** **11:32 AM**	**7**	**8** Hac Meeting Student Union	**9** Member Star Party
10	**11**	**12**	**13** **12:43 AM**	**14** Patterson Public Night 8 PM	**15** Offical start of monsoon season	**16** Venus 2° N of moon
17 	**18**	**19** Vesta at Opposition	**20** **3:51 AM**	**21** Summer Solstice	**22**	**23**
24	**25**	**26**	**27** **9:53 PM** Saturn at Opposition	**28** Mars Stationary	**29**	**30**
1 Jul	**2**	**3**	**4** 	**5**	**6** **12:51 AM**	**7**
8	**9**	**10**	**11**	**12** **7:48PM** Pluto opposition	**13** Hac Meeting Student Union	**14** Mercury 2° soth of moon
15 Venus 1.6° south of moon	**16**	**17**	**18**	**19** **12:52PM**	**20**	**21**
22	**23**	**24**	**25** Saturn 2° S of Moon Mercury Stationary	**26**	**27** **1:20PM** **Mars opposition**	**28**
29 Delta Aquarid Meteors	**30** Delta Aquarid Meteors	**31** Mars closest approach Delta Aquarid Meteors	**1 Aug**	**2**	**3**	

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com