

November-December
2009
The International Year
of Astronomy
Volume 57
Issue 6

The Observer

The Newsletter of Central Valley Astronomers of Fresno

In this Issue:

Giant ring found around
Saturn

Constellation Commission
ponders NASA's future

IBEX maps the solar sys-
tem

New planets discovered

Profiles in Astronomy: Karl
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Tycho Brahe and Johan-
nes Kepler

CVA Calendar

Nov 7-CVA Monthly meeting 7PM
-CSUF

Nov 14-CVA Star Party Hensley
Lake

Nov 21-CVA Public Star Party
RiverPark Shopping Center

Dec 5-CVA Monthly meeting 7PM
CSUF-Elections night and Gadget
night

Dec 19-CVA Star Party Hensley
Lake



Astronomical Object of the Month-M35

M35, a beautiful open cluster in Gemini, is the highlight of any winter starwatch. Nearby Auriga has M36, M37, and M38, which are also fun to see. Jump from one to the next to view all four.

-NASA image

Quote of the Month:

"The stars shine so beautifully at night."

"Yes. And I've figured out how they do it!"

Hans Bethe in 1931, telling his soon-to-be wife about his theory of stellar reactions. Bethe won the Nobel Prize for his theory in 1967.



Full Moon Nov 2



New Moon Nov 16



Full Moon Dec 1



New Moon Dec 16



New Moon Dec 31

Important Notices for CVA Members! See Inside!

The Observer is the
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The Observer November-December 2009

President's Message-

This is the last newsletter of the year. It's been a fun year with all the star parties and observing events. First I want to thank Dale for handling the meeting I had to miss. He did a great job. Secondly, I want to thank Fred Ringwald and Greg Morgan for making great presentations. This is a great club to be with great members.

The astronomy educational outreach has had a great year with many school and other group star parties. The star parties at River Park have attracted hundreds of people. Most have never looked through a telescope and many have questions. Most are very logical questions however there are those occasional ones that will always be remembered like the one where the man was upset that we would not be going to the Moon to pick up the broken pieces of the LACROSS mission. Forget about looking for water, he figured that we had littered our planet so bad that we shouldn't litter another planet.

October marked the 400th anniversary of Galileo's historical observations of Jupiter. This event changed people's perceptions of our place in the universe. In our life time we've seen our perceptions change time and time again. It's never ceases to amaze me that every time NASA has sent a mission out to answer questions for every question answered, a hundred more are asked. October 18th marked the 20th anniversary of the Galileo space mission to Jupiter. The voyage has lead to several firsts and again expanded our understanding of Jupiter and its moons.

The CVA is also going to be making some changes. Since I became a member the dues have been the same. However the operating costs have increased. These include our insurance costs, printing and mailing costs. At the last board meeting we decided to raise the membership cost to \$30. The extra money will help to offset our costs. The second suggestion was to publish the newsletter online to subscribing members. Those who wish to receive their newsletter by regular mail will continue to do so. We plan to start this in the spring and will let everyone know well in advance.

See you at the next meeting. It's Elections and gadget night.

Steve

Central Valley Astronomers of Fresno, est 1952

Our Goals:

- Provide a place for those interested in astronomy to come together and share their hobby
- Share the wonders of astronomy with the public
- Be a source of astronomy education and information for our schools, the public, and the media

Our Interests:

- To learn about astronomy and related topics
- To enjoy the night sky with the unaided eye, telescopes, and binoculars
- To learn from others and share what we know about astronomy from others

Profiles in Astronomy

Karl Ludwig Harding 1765-1834

Harding was born in Lauenberg, Germany, and studied mathematics and physics (then "natural philosophy") as a young man. For many years, he worked as a private tutor; in 1796, he was hired to tutor the son of the famous scientist Johann Schroter, and, at the same time allowed to work at Schroter's observatory. Later, he worked for Carl Fredrich Gauss at Gauss's laboratory at Gottingen University. Eventually, Harding took Gauss's position as a professor at Gottingen and studied and taught there for the rest of his life.

It was while at Schroter's observatory in 1804 that Harding made his most famous discovery, that of the largest known asteroid, Juno. He also discovered three comets, and several variable stars and nebulae, all of which he studied intensely. Eventually, he published the *Atlas Novus Coelestis*, which contained research on and the positions of over 120,000 stars. Even today, it is considered one of the best stellar atlases ever produced.

A crater on the Moon, Harding, is named after him, as is the asteroid 2003 Harding.



Sources

http://en.wikipedia.org/wiki/karl_ludwig_harding

"Harding, Karl Ludwig." Ed. Patrick Moore. *International Encyclopedia of Astronomy*. New York: Orion Books, 1987. P. 178.






Don't Forget! The CVA Online Store!

On it, we have a wide variety of merchandise with the CVA logo, including shirts, sweatshirts, hats, mugs magnets, and other mementos. Some of the clothing items come in several colors, but you have to go to the individual product pages to see them.

Each product includes a donation to CVA

The CVA Online Store:
<http://www.cafepress.com/CVAFresno>

CVA Calendar for November and December 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 November Daylight Savings time ends-2AM	2 Full Moon 	3 Election Day in several states	4	5 Taurid Meteor Shower	6	7 CVA Meeting 7PM CSUF
8	9	10	11 Veterans' Day	12 Pegasus Meteor Shower	13	14 CVA Hensley Lake Star Party
15	16 New Moon 	17 Leonid Meteor Shower	18 40th anniver- sary of Apollo 12's landing on the Moon	19	20	21 CVA Public Star Party River- Park
22	23	24	25	26 Thanksgiving Day	27	28
29	30	December 1 Full Moon 	2	3	4	5 CVA meeting 7PM CSUF
6	7 Pearl Harbor Day	8	9	10 Monocerotid Meteor Shower	11 Hanukkah Begins	12
13	14 Geminid Meteor Shower	15	16 New Moon 	17	18	19 CVA Hensley Lake Star Party
20	21 Winter Solstice	22 Ursid Meteor Shower	23	24 Christmas Eve 41st anniversary of Apollo 8 orbiting the Moon	25 Christmas Day	26 Boxing Day (Canada) Kwanzaa
27	28	29	30	31 Full Moon  Partial Lunar Eclipse New Year's Eve	January 1, 2010 New Year's Day	2

What's New in Space

The NASA Spaceflight Commission Report Submitted to the President

On September 1, NASA's spaceflight review committee submitted its preliminary report on future manned spaceflight to President Obama. Among other things, the committee recommended that the space shuttle be kept flying at least through 2011, and possibly up to 2015, when the Orion CEV will be ready for launch. The committee also recommended continued funding for ISS through 2020; current funding is scheduled to end in 2015. More importantly, the committee called NASA's plans to land men on the Moon by 2020 very unrealistic due to funding constraints, and urged the space agency to form partnerships with other nations to explore the Moon, and also Mars. It said nothing about replacing the controversial Ares I rocket with the Atlas or Delta or a space shuttle booster derivative. Although the President is currently deeply involved in health care legislation, he will take up the proposals and probably act on them within the next few months.



What Remains(as of now) in the Shuttle Program

With the successful ending to the mission of STS-128, which landed at Edwards Air Force Base on September 8, NASA currently has six more shuttle flights planned, with the last one scheduled for September of 2010. They are:

STS-129	launch on November 12, 2009
STS-130	" " February 4, 2010
STS-131	" " March 18, 2010
STS-132	" " May 14, 2010
STS-133	" " July 29, 2010
STS-134	" " September 16, 2010

Many experts believe that the President will give the go-ahead to have at least three, and possibly four, shuttle flights in 2011, to finish up a few last things aboard ISS, and also to deliver crews and supplies. If the President does agree to it, he will have to do so soon; preparing for a shuttle mission takes anywhere from a year to two years: to plan the mission's objectives, prepare the payload hardware, get the shuttle and its booster system ready for flight, and choose and train the crew. What happens after 2011 is anyone's guess, although there is a possibility that that shuttle program may continue with three flights a year up to 2015, all to ISS, when the Orion CEV is supposed to be ready for manned flight. (it is also possible that the Orion CEV program may be speeded up to have its first manned launch as early as 2013). Many American spaceflight experts cannot fathom the U.S. being out of the manned spaceflight loop for almost four years, while the Russians, Europeans, Chinese, and possibly Indians, move forward. Granted, a number of Americans will be in space aboard ISS from 2011 to 2015, but they will have to do it through Russian Soyuz spacecraft, and, in terms of national prestige, that simply does not sit with too many people. They are hoping that President Obama, even with the budget deficits and other financial and political problems, agrees with them.

On the Space Tourism Front...

Many people who have put down money for Virgin Galactic flights aboard Richard Branson's SpaceShip2 are wondering if they'll ever fly in space. In 2004, when SpaceShip1 made its historic X-Prize winning flights, the goal was commercial space flights by 2008. Then, it was set back to 2010, and now the earliest date being tossed about is 2011. VG and Scaled Composites, Burt Rutan's company that is building SS2, plans to have the complete WhiteKnight2 "mother ship" and SS2 ready by the end of this year, with test and FFA certification flights in 2010. WhiteKnight 2 is already undergoing flight testing, and VG officials are sure that full-scale sub-orbital space missions will take place by the end of 2010 or early 2011. VG executives say that they are currently holding \$40 million in space flight payments from 300 people and plan to honor all of them. Rumor has it that passengers on the first flight will include Rutan, Branson, and black hole physicist Stephen Hawking.

NASA Space Telescope Discovers Largest Ring Around Saturn

NASA's Spitzer Space Telescope has discovered an enormous ring around Saturn -- by far the largest of giant planet's many rings.

The new belt lies at the far reaches of the Saturnian system, with an orbit tilted 27 degrees from the main ring plane. The bulk of its material starts about six million kilometers (3.7 million miles) away from the planet and extends outward roughly another 12 million kilometers (7.4 million miles). One of Saturn's farthest moons, Phoebe, circles within the newfound ring, and is likely the source of its material.

Saturn's newest halo is thick, too -- its vertical height is about 20 times the diameter of the planet. It would take about one billion Earths stacked together to fill the ring.

"This is one supersized ring," said Anne Verbiscer, an astronomer at the University of Virginia, Charlottesville. "If you could see the ring, it would span the width of two full moons' worth of sky, one on either side of Saturn." Verbiscer; Douglas Hamilton of the University of Maryland, College Park; and Michael Skrutskie, of the University of Virginia, Charlottesville, are authors of a paper about the discovery to be published online tomorrow by the journal Nature.

The ring itself is tenuous, made up of a thin array of ice and dust particles. Spitzer's infrared eyes were able to spot the glow of the band's cool dust. The telescope, launched in 2003, is currently 107 million kilometers (66 million miles) from Earth in orbit around the sun.

The discovery may help solve an age-old riddle of one of Saturn's moons. Iapetus has a strange appearance -- one side is bright and the other is really dark, in a pattern that resembles the yin-yang symbol. The astronomer Giovanni Cassini first spotted the moon in 1671, and years later figured out it has a dark side, now named Cassini Regio in his honor. A stunning picture of Iapetus taken by NASA's Cassini spacecraft is online at

Saturn's newest addition could explain how Cassini Regio came to be. The ring is circling in the same direction as Phoebe, while Iapetus, the other rings and most of Saturn's moons are all going the opposite way. According to the scientists, some of the dark and dusty material from the outer ring moves inward toward Iapetus, slamming the icy moon like bugs on a windshield.

"Astronomers have long suspected that there is a connection between Saturn's outer moon Phoebe and the dark material on Iapetus," said Hamilton. "This new ring provides convincing evidence of that relationship."

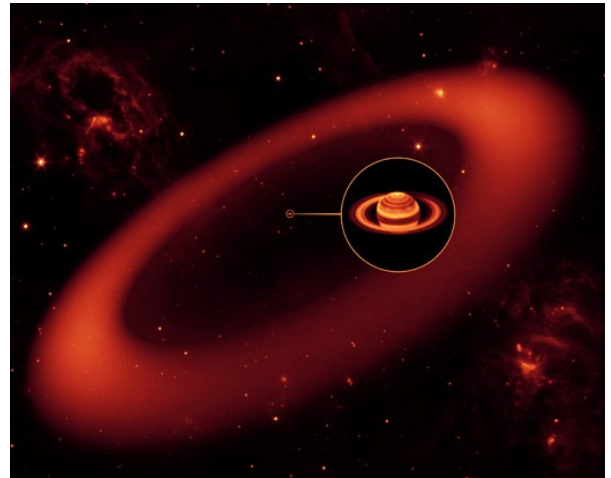
Verbiscer and her colleagues used Spitzer's longer-wavelength infrared camera, called the multiband imaging photometer, to scan through a patch of sky far from Saturn and a bit inside Phoebe's orbit. The astronomers had a hunch that Phoebe might be circling around in a belt of dust kicked up from its minor collisions with comets -- a process similar to that around stars with dusty disks of planetary debris. Sure enough, when the scientists took a first look at their Spitzer data, a band of dust jumped out.

The ring would be difficult to see with visible-light telescopes. Its particles are diffuse and may even extend beyond the bulk of the ring material all the way in to Saturn and all the way out to interplanetary space. The relatively small numbers of particles in the ring wouldn't reflect much visible light, especially out at Saturn where sunlight is weak.

"The particles are so far apart that if you were to stand in the ring, you wouldn't even know it," said Verbiscer.

Spitzer was able to sense the glow of the cool dust, which is only about 80 Kelvin (minus 316 degrees Fahrenheit). Cool objects shine with infrared, or thermal radiation; for example, even a cup of ice cream is blazing with infrared light. "By focusing on the glow of the ring's cool dust, Spitzer made it easy to find," said Verbiscer.

These observations were made before Spitzer ran out of coolant in May 2009 and began its "warm" mission.



From www.nasa.gov

Image credit-NASA-JPL/Caltech-Keck

Astronomical Trivia

Last issue's astronomical trivia question:

What was the original name that the ancient Greeks gave to the star cluster that we today know as the Pleiades?

Again, Chris Denny got the right answer. The ancient Greeks knew the Pleiades as "the Daughters of Atlas" or the Atlantides. And yes, that is where the Atlantic Ocean got its name.

This issue's trivia question-

To finish off the International Year of Astronomy- What, specifically, did the Catholic Church object to when charging Galileo with heresy for his telescopic observations?

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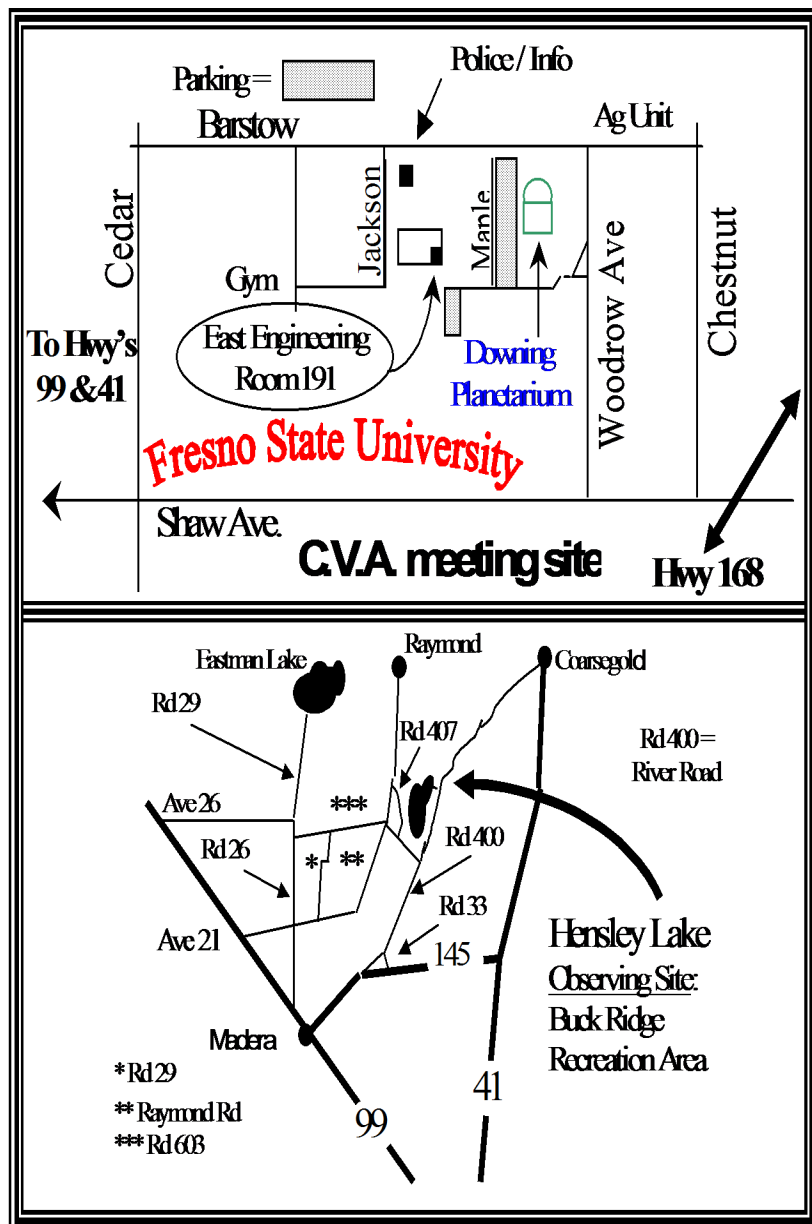
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Deadline for articles submission for the
January-February 2010 issue-

December 18

The issue will be mailed

On December 28



32 New Planets Found

On October 18, scientists at the Southern European Observatory announced that they had found 32 new planets, almost all of them much larger than the Earth. They said that several were the size of Jupiter, while others were at least five to six times larger than the giant gas planet. None appeared to be habitable, but, as one scientist pointed out, the finding of so many makes it likely that hundreds, even thousands of more exist outside our solar system.

Number of extra-solar planets found so far
402

How many more are out there?

Astronomical Short-

Tycho Brahe (whose real name was Tyge Ottesen Brahe de Knudstrep), was born into a wealthy Danish family, and lived a flamboyant life. He was admired by kings, and attracted the most beautiful women of the European royal courts. As a student, he lost his nose in a sword fight, and for the rest of his life, wore a replacement made out of gold. At a banquet in Prague in 1601, he refused to leave the table to heed the call of nature, and ended up dying from a bladder infection. On his deathbed, he finally gave his assistant, a young German mathematician named Johannes Kepler, permission to read his notebooks; Kepler would eventually use Brahe's observations to help formulate his three laws of planetary motion.

Central Valley Astronomers Membership Form-2010

New Member Renewing Member

Name _____ Phone # _____

Address _____ City _____ Zip _____

State _____ E-mail Address _____

Membership Category

Student \$15

Regular \$30

Family \$35

Reduced rate magazine subscriptions

Astronomy add \$34

Sky and Telescope add \$32.95

What are your areas of astronomical interest? _____

Mail this application with check to: Central Valley Astronomers, Inc.

c/o Bryon Spicci
30669 Hamilton Drive
Exeter, Ca 93221

Two important notices for CVA members:

1. Due to increased costs, especially with our insurance, membership dues will be raised for the first time in several years. In particular, the regular membership is going up from \$25 to \$30. CVA is still a bargain, though, and don't miss it! Sign up for the 2010 year now. Use the renewal form above.

2. As one cost-cutting measure, the CVA newsletter, *The Observer*, will go online for members starting with the March-April 2010 issue. If you still want a hard copy delivered to your residence, contact me, Larry Parmeter, the editor, by February 15, 2010. My e-mail address is lanparmeter3@hotmail.com, or by phone at 559-276-9753. Otherwise, I will assume that you'll get the newsletter at the CVA website, and I will not mail you a copy.

**Happy Thanksgiving, Christmas, Hannaukh, and New Years 2010
to all our CVA Members!**

NASA Spacecraft Provides First View of Our Place in the Galaxy

Interstellar Boundary Explorer, or IBEX, spacecraft has made it possible for scientists to construct the first comprehensive sky map of our solar system and its location in the Milky Way galaxy. The new view will change the way researchers view and study the interaction between our galaxy and sun.

The sky map was produced with data that two detectors on the spacecraft collected during six months of observations. The detectors measured and counted particles scientists refer to as energetic neutral atoms.

The energetic neutral atoms are created in an area of our solar system known as the interstellar boundary region. This region is where charged particles from the sun, called the solar wind, flow outward far beyond the orbits of the planets and collide with material between stars. The energetic neutral atoms travel inward toward the sun from interstellar space at velocities ranging from 100,000 mph to more than 2.4 million mph. This interstellar boundary emits no light that can be collected by conventional telescopes.

The new map reveals the region that separates the nearest reaches of our galaxy, called the local interstellar medium, from our heliosphere -- a protective bubble that shields and protects our solar system from most of the dangerous cosmic radiation traveling through space.

"For the first time, we're sticking our heads out of the sun's atmosphere and beginning to really understand our place in the galaxy," said David J. McComas, IBEX principal investigator and assistant vice president of the Space Science and Engineering Division at Southwest Research Institute in San Antonio. "The IBEX results are truly remarkable, with a narrow ribbon of bright details or emissions not resembling any of the current theoretical models of this region."

NASA released the sky map image Oct. 15 in conjunction with publication of the findings in the journal *Science*. The IBEX data were complemented and extended by information collected using an imaging instrument sensor on NASA's Cassini spacecraft. Cassini has been observing Saturn, its moons and rings since the spacecraft entered the planet's orbit in 2004.

The IBEX sky maps also put observations from NASA's Voyager spacecraft into context. The twin Voyager spacecraft, launched in 1977, traveled to the outer solar system to explore Jupiter, Saturn, Uranus and Neptune. In 2007, Voyager 2 followed Voyager 1 into the interstellar boundary. Both spacecraft are now in the midst of this region where the energetic neutral atoms originate. However, the IBEX results show a ribbon of bright emissions undetected by the two Voyagers.

"The Voyagers are providing ground truth, but they're missing the most exciting region," said Eric Christian, the IBEX deputy mission scientist at NASA's Goddard Space Flight Center in Greenbelt, Md. "It's like having two weather stations that miss the big storm that runs between them."

The IBEX spacecraft was launched in October 2008. Its science objective was to discover the nature of the interactions between the solar wind and the interstellar medium at the edge of our solar system. The Southwest Research Institute developed and leads the mission with a team of national and international partners. The spacecraft is the latest in NASA's series of low-cost, rapidly developed Small Explorers Program. NASA's Goddard Space Flight Center manages the program for the agency's Science Mission Directorate at NASA Headquarters in Washington.

From www.nasa.gov

