SIRIUS ASTRONOMER

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The Newsletter of the Orange County Astronomers

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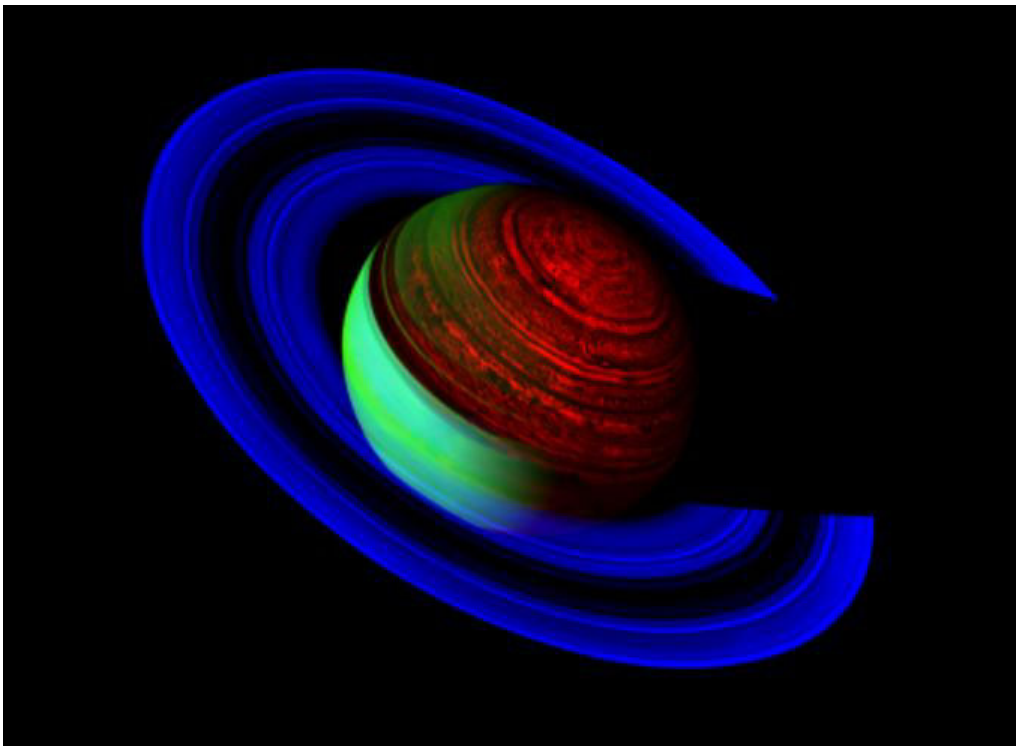
SATISFY YOUR HUNGER! ANNUAL STARBECUE JULY 14TH!



This striking false-color mosaic was created from 25 images taken by Cassini's visual and infrared mapping spectrometer over a period of 13 hours on February 24, 2007, and captures Saturn in nighttime and daytime conditions. The visual and infrared mapping spectrometer acquires data simultaneously at 352 different wavelengths, or spectral channels. *(credit: NASA/JPL)*

OCA CLUB MEETING

The free and open club meeting will be held Friday, July 13th at 7:30 PM in the Irvine Lecture Hall of the Hashinger Science Center at Chapman University in Orange. The scheduled speaker is Frank Busutil of Project Bright Sky, a program which brings amateur astronomy to the blind (details, page 10).

Next General Meeting: August 10th

STAR PARTIES

The Anza site will be open this month on July 14th. The Black Star Canyon site will be open this month on July 7th. Members are encouraged to check the website calendar, for the latest updates on star parties and other events.

Please check the website calendar for the outreach events this month! Volunteers are always welcome!

You are also reminded to check the web site frequently for updates to the calendar of events and other club news.

COMING UP

The next session of the Beginners Class will be held on Friday, July 6th (and next month on August 3rd) at the Centennial Heritage Museum at 3101 West Harvard Street in Santa Ana.
GOTO SIG: TBA (contact coordinator for details)
Astrophysics SIG: July 20th, Aug. 17th
Astro-Imagers SIG: July 17th, Aug. 21st
EOA SIG: July 25th, Aug. 22nd
Dark Sky SIG: TBA (contact coordinator for details)

President's Message

By Barbara Toy

In case you get this before our July star party at Anza, this is a reminder – the July star party is our annual Star-B-Que potluck party, so bring something to share and come on out and enjoy the company of your fellow club members as well as a good night of viewing!

So far, we're seeing more clear nights out at Anza in spring and early summer than we have for several years, so it looks like it should be a good summer for viewing. If you haven't tried viewing yet from Anza or Black Star Canyon, you really should – for real enjoyment of our hobby, there's nothing like a nice clear summer night under the stars, especially with the good company a star party provides!

Kuhn Update

Mechanical problems are inevitable in the life of any mechanical object, and the problem is compounded when you add electronic components. The club's Kuhn telescope experienced problems with both in the last month, but thanks to the prompt assistance of Pat Knoll and Dave Radosevich, and the donation of a new computer by Joe Busch, it is up and running and in better condition than before.

The first problem we had was that the set screw in the coupler between the declination drive and the worm gear came completely loose, so the drive could no longer move the gear. A Star Member was using it at the time, and (Murphy's Law was obviously in operation) it failed with telescope pointing straight up. Fortunately, Murphy's Law did not completely control the situation, as this happened only a couple of days before the second May star party, when both Dave and Pat were planning to be at Anza. There were plenty of people on site those two days and the weather was good, so we didn't have to worry about security or safety of the telescope even though the observatory roof couldn't be closed and nobody had to make an emergency trip to Anza to deal with the situation.

Between them, Dave and Pat repaired the dec drive, and thanks to the fact that Dave had access to the appropriate tools, the drive now has a larger set screw, which should give us fewer problems in the future. The Kuhn ran like a charm that night, with less backlash and more accuracy than before this unfortunate incident.

Sadly, the next Star Member to use the Kuhn called me about two weeks later to let me know that the computer that we use to control the telescope wouldn't turn on. He did what he could to resuscitate it, but it was totally dead. The conditions at the Anza site are pretty extreme, and that computer has been in place for several years now, so it really isn't too surprising that eventually there would be a problem, but I'm really sorry it deprived one of our members of a good night with the Kuhn. Fortunately, Joe Busch had donated a new computer that we hadn't yet had a chance to install, and Pat Knoll ultimately was able to get it to connect to the interface computer and to get everything back up and running the following Saturday. He also had me help him give the collimation a final tweaking, so the images in the eyepiece are really sharp. After all this, the Kuhn is now running better than ever, and just in time for the busy summer season….

Pat's now working on appropriate interfaces for guiding so we can take longer images with the Kuhn. Our current goal is to set things up so people can use their own equipment to do the actual imaging, controlled by and with images saved to their own laptops. This is the way everyone who has been trying to image with the Kuhn in the last few years has wanted to use it, and it should give us the greatest overall flexibility in using it. If you are interested in imaging with the Kuhn yourself or using it visually in the future and are not yet a Star Member, do feel free to join our ranks! All it takes is a one-time fee of $150.00, which helps to support the telescope and observatory, plus going through the training program. Independent use of the Kuhn is limited to Star Members, and this is really one of the best bargains out there.

If you are a new star member or an existing star member who wants to go to the training, please let me know; I am willing to set up training sessions at almost any star party and on other occasions when I know in advance I'll be out at Anza and running the Kuhn, unless there is work going on in the observatory that would get in the way of a training session. Please do make arrangements in advance, though, rather than just showing up at the observatory at a star party expecting to be trained. If you've been trained in the past but want a refresher course, I'll be happy to oblige – my goal as Observatory Custodian is to have the Kuhn used regularly by as many members as possible as it is a wonderful instrument that deserves to be shared.

RTMC 2007

The RTMC Astronomy Expo for 2007 is now behind us – there was a lot of moon Memorial Day weekend, which interfered with serious observing, and there were a few clouds, but the days weren't too hot, the nights weren't too cold, and it was generally a fun and informative weekend. If you missed it – well, there's always next year!

Karen Schnabel ran the OCA booth, as she has now for several years (except one time when someone inconsiderately scheduled a wedding on that weekend). Besides establishing a presence for our club at RTMC and acting as a home base for club members there, this is a significant fundraiser for our library. Karen advises me that we took in $230 from the booth this year, which actually is a net gain to the library fund of around $125 after expenses. Many thanks to all of you who donated books and other sales items, and to those who helped run the booth during RTMC!

For the second year we took the club's annual group photo by the OCA booth, so we could include Karen and the booth. We had a pretty good turnout this year, even though several club members who were at RTMC at the time didn't make it. The final version of the photo is above, so you can see it for yourself and maybe make some guesses as to which club members who were on site at the time weren't there for the photo (Alan Smallbone was behind the lens, which was his excuse, as he didn't have a tripod with him. I don't know about the others…)

For next year – do plan to show up for the club photo if you're at RTMC on Saturday around 1:00. It doesn't take long, and, as anyone who's looked at the old club photos that John Sanford has provided can see, these are important is helping to show the changing faces of the club over time. And we also have a lot of fun joking and visiting with each other as we attempt to get organized for the shot(s) – there's a lot of entertainment value in getting together with a bunch of fellow club members for a group photo!

Our General Meetings

Thinking back, it doesn't seem that I've said much about our general meetings in the time I've written for the Sirius Astronomer, even though they are one of the central functions of the club. There are a lot of club members who come to as many meetings as they can, and there are others who've never been to a meeting at all. This is to let those of you who've never been to a

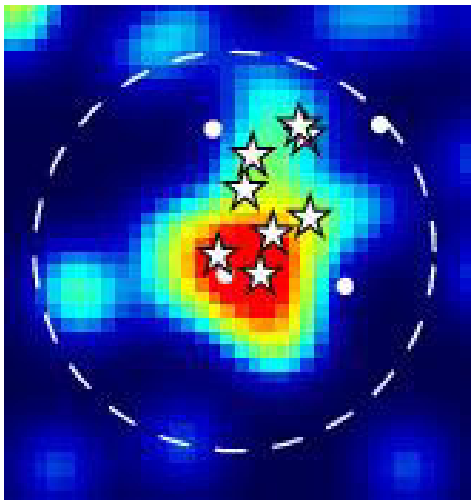
(continued on page 8)

AstroSpace Update

July 2007
Gathered by Don Lynn from NASA and other sources

Black hole spin – Astronomers have made the first measurements of the spin of several supermassive black holes. Relativity says that rapid massive spin will alter spectral lines, and such alteration was first seen in new observations by XMM-Newton (orbiting X-ray observatory) of the iron lines in the X-ray spectra of matter falling into the black holes. The best data was obtained for the black hole in the center of galaxy MCG-06-30-15, and it was found to be spinning at 98.7% of the maximum spin allowed by General Relativity. When matter falls into an accretion disk about a black hole, then drops into the black hole itself, it causes the black hole to spin substantially faster. When matter (or other black holes) simply collides with a black hole, the spin added is usually quite moderate. The rapid spin of this black hole shows it grew mostly by accretion.

First-time visitor – A dwarf galaxy discovered last year, named Andromeda XII, has been found to have formed far from the large galaxies in our Local Group and is falling into our system for the first time in its life. Galaxy formation theory says that pristine dwarf galaxies should still be falling in, but this is the first one found. All other dwarf galaxies in our Local Group appear to have closely encountered one of the large galaxies and been at least somewhat disrupted. Andromeda XII is the faintest and perhaps least massive dwarf galaxy in the vicinity of the giant Andromeda Galaxy (M31). It is in a highly eccentric orbit and is considerably behind M31 from our viewpoint. Measures of its motion show that it formed about 1/3 of the way to M81 and has had time since formation to make only one partial orbit. The speed with which it is falling generally toward M31 indicates that astronomers' estimates of M31's mass may be too small. Studies of Andromeda XII should tell us how dwarf galaxies formed, before encounters modified them. It was discovered in a survey with the very wide-field MegaCam on the CFHT telescope in Hawaii, and follow-up observations were made with the Keck II and Subaru telescopes down the street, and the Green Bank radiotelescope in West Virginia.



Andromeda XII with confirmed member stars highlighted (Keck Observatory)

Dark matter – Analysis of WMAP (cosmic microwave background spacecraft) data shows that there is an excess of microwave emission in a region around the center of our Milky Way galaxy. Most of the initial guesses as to the cause have been ruled out or deemed unlikely. The characteristics of the excess emission match the predictions of theorists who claim that non-baryonic dark matter particles (whatever they are) should occasionally annihilate in areas where they are concentrated, such as the centers of galaxies, creating pairs of ordinary particles (such as electrons and positrons), that produce microwaves. If this is indeed happening, it should also produce gamma rays that will probably be detectable by the GLAST spacecraft, scheduled for launch late this year.

Cassini (Saturn mission) – Scientists have analyzed the data from Cassini watching stars that are obscured behind Saturn's rings, and have concluded that ring material is much more clumped than believed. Most of the matter at any given time is in clumps with nearly empty spaces between, and the clumps are constantly colliding, breaking up and reforming. Such a structure has 2 or 3 times the mass of a generally smooth distribution of particles within the rings, so the ring mass estimates have to be revised. Such clumps would grow to larger size, even into a moon, but different rates of revolving about Saturn stretch the clumps and pull them apart. The maximum clump size appears to be about 100 to 160 feet across. The clumps are broad and flat, 10 to 50 times wider than thick. Clumps in the B ring are flatter and have smaller spaces between them than clumps in the A ring.

It has been difficult to explain how water vapor is being thrown out of the cracks on Saturn's moon **Enceladus**, in a sort of **geyser** action. The ice should be too cold for this. One theory is that radioactive elements have kept the inside of the moon warm. New calculations show that frictional heat can keep it warm enough for the geysers. Enceladus's orbit is known to be slightly elliptical, which causes tidal forces, but tidal heating was calculated not to be enough. However, tidal forces on the ice along the cracks (called Tiger Stripes) known to exist on Enceladus have now been shown to open and close the cracks, and rub the ice on the sides of the cracks against each other. This rubbing was calculated to produce enough heat to melt or sublimate (change from ice to vapor) ice in the quantities observed. The calculations show that different cracks open up at different points in the moon's orbit, so careful measurements of when and where the plumes are emitted should verify this theory. Future observations will be made of this. The ice along the cracks should move over a foot back and forth on each orbit. This study predicted that a layer of liquid water should exist below the geysers, at least 3 miles below the ice surface.

Cassini instruments have detected electrons in the plasma (electrically charged gas) trapped in Saturn's magnetic field that are moving away from the moons **Tethys and Dione**. This implies the moons are throwing material into space, perhaps in a manner similar to Enceladus, which has been observed to have geyser activity. Observations will be made for ions (charged atoms) to see what kind of material is involved. Flybys of Dione and Tethys were already scheduled, and so observations will be made to detect material being thrown off.

(continued on page 6)

Chew on This

Looking down on the jaws of the Mars Rock Crusher, we see a magnetite rock get crushed into smaller and smaller particles.

The Mars robotic rovers, Spirit and Opportunity, are equipped with RATs, or Rock Abrasion Tools. Their purpose is to abrade the surface patina off the Mars rocks so that the alpha x-ray spectrometer can analyze the minerals inside the rocks, rather than just on the surface.

But future robotic missions to Mars will be asked to go even further below the surface. Scrapers and corers will gather rock samples of substantial size, that, in order to be analyzed by a spectrometer, will need to be crushed into a fine powder.

Crushing rocks on Mars? Now there's a problem that brings to mind a multitude of possible approaches: Whack them with a large hammer? Squeeze them until they explode? How about just chewing them up? It was with this latter metaphor that the planetary instrument engineers struck pay dirt—so to speak.

Thanks to NASA's Planetary Instrument Definition and Development Program, a small group of NASA engineers came up with the Mars Rock Crusher. Only six inches tall, it can chew the hardest rocks into a powder.

The Mars Rock Crusher has two metal plates that work sort of like our jaws. One plate stays still, while the other plate moves. Rocks are dropped into the jaw between the two plates. As one plate moves in and out (like a lower jaw), rocks are crushed between the two plates. The jaw opening is larger toward the top and smaller towards the bottom. So when larger rocks are crushed near the top, the pieces fall down into the narrower part of the jaw, where they are crushed again. This process repeats until the rock particles are small enough to fall through a slit where the two plates are closest.

Engineers have tested the Mars Rock Crusher with Earth rocks similar to those expected to be found on Mars. One kind of rock is hematite. The rusted iron in hematite and other rocks help give Mars its nickname "The Red Planet." Another kind of rock is magnetite, so-called because it is magnetic. Rocks made by volcanoes are called basalts. Some of the volcanoes on Mars may have produced basalts with a lot of a mineral called olivine. We call those olivine basalts, and the Rock Crusher chews them up nicely too.

Visit www.jpl.nasa.gov/technology to read the latest about other NASA technologies for exploring other planets and improving life on this one.

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

(continued from page 4)

Gamma-ray burst jets – Gamma-ray bursts usually last only a matter of seconds or minutes, but they often have an afterglow visible in many wavelengths other than gamma rays, lasting for days or weeks. The afterglow is believed to be caused by jets thrown out by the burst colliding with surrounding gas. An automated 24-inch telescope in Chile has managed to measure the speed of the jets in 2 cases. The speed was 99.9997% the speed of light. The question now is what mechanism accelerates particles to such high speeds. The automated telescope took about 40 seconds to begin observations after receiving the signal from the satellite that detected the bursts.

SOHO (solar orbiting observatory) – A scientist using SOHO has found a way to forecast solar radiation storms, giving up to an hour advance warning. Spacecraft controllers and astronauts on lunar missions would very much like to have such advance warning to protect against damage. The damaging radiation from solar storms is in the form of ions, electrically charged atoms. The new forecast method looks at the intensity and time to rise of electron surges, which always precede the ions, and predicts the severity of the ions. In a test of the method on a small set of past data, it predicted all ion storms and only occasionally predicted an ion storm when only a weak or no storm appeared. Further work will be done to improve the method.

Mars rover Spirit has examined a patch of brightly colored soil uncovered by dragging its broken wheel, and found the first soil on Mars known to be rich in silica (about 90%), the stuff that makes up sand and quartz, commonly found on Earth. The Martian silica is non-crystalline, unlike quartz. The patch was first measured with the infrared spectrometer, which observes from a distance, but was so interesting that the rover was commanded to roll over and place its alpha particle X-ray spectrometer on it. Of dozens of patches of unusual soil found in rover tracks, this is the first rich in silica. The most likely ways of producing this kind of soil involve abundant liquid water, again adding to the evidence that Mars had much more water in the past. One possibility was that it was produced by interaction of soil with acidic volcanic vapors in the presence of water. Another is that a hot spring could produce it.

MESSENGER (Mercury mission) performed its second gravity slingshot flyby of Venus on June 6, reaching an altitude of only about 200 miles. A large quantity of observations was made of Venus, including over 600 images, many of them coordinated with those made by Venus Express, which orbits the planet. Ground-based simultaneous observations were also made. MESSENGER observed the cloud deck, plasma (electrically charged gas), atmosphere, ionosphere, oxygen airglow, magnetic field, and surface (using infrared), and looked for lightning. For 20 minutes MESSENGER was in the shadow of Venus, successfully running on just its storage battery. Solar panels recharged the battery within about 2 hours of reentering sunlight. No observations of Venus were made on the previous flyby because the planet happened to be behind the Sun then, interfering with radio contact with the spacecraft. Next encounter is the first with Mercury next January 14. A few flybys of Mercury will be made before the angles and speed are right to go into orbit in 2011. Mercury has been visited by only one previous spacecraft, Mariner 10 in 1974-5. Even though Mariner 10 flew by Mercury 3 times, it only saw half the planet in daylight, since the spacecraft's orbital period was a multiple of a Mercury day. MESSENGER will see the entire planet.

Approach image of Venus taken by MESSENGER on June 5, 2007 (Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington)

Eris (dwarf planet) – The mass of Eris has been calculated from observing the orbit of its moon, and it is 27% larger than Pluto. When the diameter of Eris was found to be larger than Pluto a couple of years ago, that prompted the IAU to define planet, resulting in the demotion of Pluto. Knowing the mass and diameter of Eris allowed calculating its density, which is about 2 (times water's density), implying it is composed of rock and ice, similar to Pluto.

Giant exoplanet – One of the oddest planets has been found orbiting another star, with a mass more than 13 times that of Jupiter, so close to its star that it orbits in less than 4 Earth days, and with a rather elliptical orbit, rather than the nearly circular ones found on most closely-orbiting planets. It is the most massive of all known closely-orbiting planets. It is a transiting planet, that is, passes in front of its star, as seen from Earth. There is a lively debate about how to distinguish very large planets from small brown dwarfs (a star with insufficient mass to fuse ordinary hydrogen). The 2 major positions are 1) on the basis of how the object formed (like a star, or from debris around a newly formed star), or 2) whether massive enough to fuse deuterium (heavy isotope of hydrogen). Theoretically, though this has not been tested by observation, about the mass of this planet is the minimum needed to fuse deuterium. So this planet may someday be reclassified as a brown dwarf. It was found by a very small automated telescope operating on Haleakala (mountain) in Hawaii by the XO project. The automated telescopes monitor thousands of stars to find drops in brightness that might be caused by a planet transiting. Candidates discovered are then monitored by a team of amateur astronomers to weed out other causes of drops in brightness, and then the final candidates are observed by large telescopes, such as the 9-meter Hobby-Eberly, to confirm.

Coolest brown dwarf known has been discovered in the constellation Cetus, having a temperature of only 600-700 degrees. It is thought to be about 50 light-years away, but precise distance measurements will take another year or so. Its mass is about 15-30 times that of Jupiter. It was discovered by the UKIDSS survey, which is using a very wide field infrared camera on the UKIRT telescope in Hawaii to survey about a quarter of the entire sky. Confirmation was performed by the Gemini South Telescope in Chile. Spectral features of steam and methane were found, which occur on only the coolest of brown dwarfs. The UKIDSS survey is only 5% complete, so it will likely discover more exotic objects.

Macho distance measured – Scientists have a new method of determining the distances to objects in or near our Milky Way galaxy that are gravitationally lensing background objects (bending their light by the gravity of the foreground object). By watching a gravitational lensing event with the Spitzer Space Telescope millions of miles away while simultaneously observing it from Earth, astronomers were able to determine the parallax, or apparent shift in position as seen from the 2 viewpoints, and calculate the distance to the foreground object of the lensing event. The OGLE survey has been discovering such events to try to characterize objects too dark to see that are orbiting about our galaxy. Such objects have been termed machos (massive compact halo objects), and are thought to be composed of black holes, very faint stars and planets. Until this measurement, it was not clear whether the machos being found were indeed in our galaxy (and its outer halo), or more distant. The newly measured macho was found to be in the halo of the Milky Way, and to be binary, that is 2 objects orbiting each other. They are probably black holes. Because the lensing event has finished, there is no way to perform any more observations on the objects. But further observations will be made on new machos as they are discovered.

Chandra (orbiting X-ray observatory) has found a bright arc of very hot gas (170 million degrees) extending more than 2 million light-years in a massive cluster of galaxies. Possible causes for this are 1) two massive galaxy clusters are colliding, causing a shock wave where gas clouds hit, or 2) an outburst occurred from matter falling into a supermassive black hole whose jets threw out some of the matter, which caused shocks where the jets hit other matter. There are problems with both theories, but less serious problems with the galaxy collision theory. If theory 1 holds, then it is one of the most powerful collisions seen, and it does not have the double peak in X-ray emission seen in other such collisions. Further X-ray observations will be made to try to resolve this. If theory 2, then it would be by far the most energetic such event ever seen, requiring about 30 billion times the mass of the Sun to have been consumed in a relatively short period of time (in galaxy evolution terms).

Galaxy activity – A group of astronomers has mapped for the first time where star formation and supermassive black hole activity occurred around the largest galaxy structures. The objects studied were so far away that we are seeing them as they were when the light left them 6 to 9 billion years ago. Surprisingly the activity mainly occurred not in the centers of galaxy clusters, but in the "suburbs". Data was taken for this study by 9 large Earth-based telescopes and 3 space telescopes, observing visible light, infrared, X-ray and radio. The study also discovered the largest known supercluster (cluster of clusters) of galaxies present when the Universe was half its present age.

FUSE (orbiting far ultraviolet observatory) has measured the properties of a pair of very massive stars orbiting each other in the Large Magellanic Cloud, a satellite galaxy to our Milky Way. They constitute one of the most extreme binary stars known. Their masses were found to be 62 and 37 times that of the Sun, and they orbit every 2.25 Earth days. They are 6 times closer to each other than the Earth is to the Sun. They are probably less than 3 million years old. The more massive star has a stellar wind that throws out 400 times as much material as our Sun's solar wind does, while the other throws only 40 times. The winds collide, and the collision zone wraps around the smaller star and emits X-rays and far (short wavelength) ultraviolet. As the stars age, in perhaps a million years they will swell and begin to transfer matter between them, and will probably merge into a single star.

Altair - Using an array of 4 telescopes on Mt. Wilson linked as an interferometer (the CHARA array), astronomers have imaged the star Altair. Interferometers have imaged several red giant stars, but this is the first ordinary-sized star. CHARA is achieving about 25 times the resolution of the Hubble Space Telescope. The image confirmed theory that the star's rapid spin (about 180 miles per second) would result in it bulging out 22% wider than it is tall. Slightly different surface temperature patterns were found than theory predicted, however. CHARA astronomers hope to image exoplanets in the future.

XMM-Newton (orbiting X-ray observatory) has surveyed nearly 200 stars currently forming, and found that the material falling into them does not behave according to theory (which of course is being modified). Matter falling in has been found to cool the stars' corona, an effect not theorized. The cooling reduced the X-rays being emitted by the corona. Further, the material falling in was found to physically block most of the remaining X-rays from reaching us. The material did not block visible light, however, which would indicate the material is gas, not dust (dust would absorb both visible light and X-rays). Since there is known to be dust surrounding forming stars, the dust must have been vaporized by radiation from the star. Some material is thrown out by jets or wind, and was found to cause shocks where it collided with other matter. These shocks were found to emit X-rays outside the area where material absorbs X-rays. Theory was confirmed, however, in the process where matter falling in hits the star surface, heats it, and causes ultraviolet radiation.

Space Shuttle Atlantis launched June 8 on an 11-day mission to install a 17-ton segment on the International Space Station's (ISS) truss and add and move solar arrays. The mission was scheduled for March before the Feb. 26 hailstorm damaged the external fuel tank, requiring extensive repair. The mission was extended a couple of days in order to repair a tear that occurred during launch in one of the Shuttle's heat shield blankets. The plan is to staple it back together. As I write this, it will probably be extended another day to correct problems with ISS computers that control navigation and oxygen generation. The probable cause of these

(continued on page 11)

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meeting know a bit about what you're missing, and, for those who do come, to make sure you know about the different things going on, in case you're missing something.

The meetings are usually held on the second Friday of the month, at Chapman University, specifically in the Irvine Auditorium in the Hashinger science building. We have the use of this facility through the generosity of Chapman University, and every now and then, the university needs the auditorium for its own activities and we have to move the meeting date. One of these occasions is coming up next September, so – this is an early warning – the September meeting will be the first Friday of the month, September 7, instead of the second Friday.

These meetings are the club's official meetings, provided for in the Articles of Incorporation, so we do a certain amount of club business at the meetings. The most regular type is done at Charlie Oostdyk's table, where he accepts memberships and payments for other club obligations, answers questions, and maintains a stock of materials for sale. Besides calendars and other more general- interest astronomical items, he has a stock of the CDs from the last two AstroImage conferences, and other club-related merchandise, as well. The meetings are important for the club elections, too, as that is where we take formal nominations for the Board of Trustees (though we do take nominations outside the designated meetings), and the club's officially designated annual meeting is the January general meeting, which marks the end of the election process each year. As noted last month, our schedule for the elections is changing effective this year, so nominations will be taken in October and November, the ballots mailed with the December Sirius Astronomer, and the election will end with the end of the January meeting.

For most of the participants, though, the real reason for coming to the meetings is all of the other activities that go on there each month. Festivities generally get started around 7:00, with people checking out the library, the refreshments, the materials Charlie puts out down at the front table, the latest space pictures from various NASA and other sources brought by Don Lynn, taking care of business with Charlie and others, getting questions answered (whether about club matters or astronomical topics), catching up with friends, and so on – socializing is a major part of what makes these meetings special. We have two major socializing periods built into the meetings – one before the formal part of the program starts and one at the "break" (which often marks the end of the formal part of the meeting, unless people have questions for "Ask an Astronomer" or we have a raffle where the drawing is after the break).

A lot of people come mainly because they want to hear the featured speaker – we've really had a lot of good speakers over the years. Topics have covered different aspects of astronomical research and the space program, history of and research at the Mt.Wilson, Palomar and Lowell observatories, mirror making, spectroscopy and other research by amateur astronomers, sundials, developments at Meade, an account of the famous astronomers in the Hershell family from one of their descendents – all kinds of subjects, the only relationship between them is that they all relate somehow to astronomy. For about the last three years, we've had an annual "Members Night," featuring around four shorter talks by different club members on some aspect of astronomy of interest to them, results of their own research and special projects they may have been involved in. For the last two years, we've had "Astronomy Jeopardy" at the January meeting, which has proved to be entertaining and surprisingly educational.

The club announcements, which have been presented by Bob Buchheim for the last three or four years, have become a significant and frequently entertaining part of each meeting; Bob also puts together the slide shows that run before the meetings and sometimes during the break. The "What's Up" part of the program has allowed a number of members to provide a their own take on a part of the program that Chris Butler raised to a fine art over the many years he was the primary "What's Up" presenter. We always enjoy Chris's presentations on those months when he remains the presenter, but it's also interesting to see the different approaches taken by other people – and Chris certainly deserves some time off after doing these presentations for so many years by himself!

All of these activities are important to the meetings, but what people who attend seem to enjoy most are the periods before the meetings formally start and the breaks, when they can socialize, browse the library, get refreshments, catch up on gossip, make plans for upcoming events, and generally enjoy the company of a fellow members, and the socializing continues at the informal "Meeting After the Meeting," currently held at Hof's Hut on Chapman Ave. near the Crystal Cathedral.

If you haven't attended any of the general meetings, you are missing some of the best events the club provides. You can get information about upcoming speakers from the website calendar as well as the homepage, from Star Line, the club's informational phone message, and from the Sirius Astronomer. Do check to see if there are featured talks of particular interest to you coming up, and make a special effort to come, so you can see for yourself how fun and valuable they are.

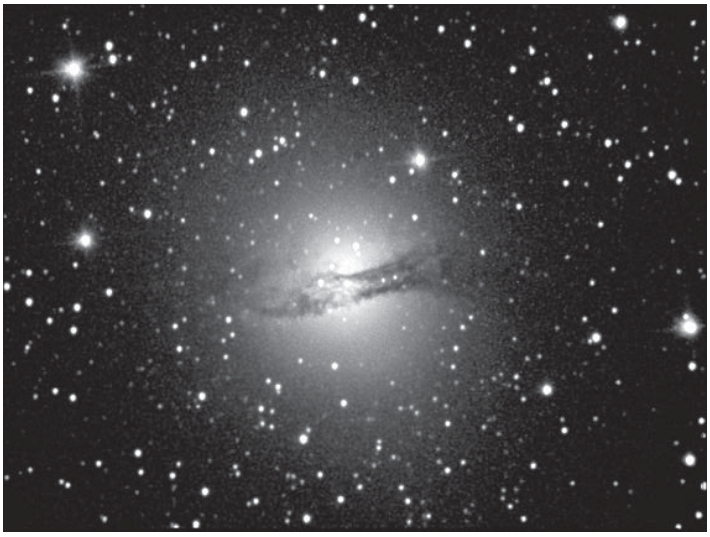
What have you been doing in the Dark?

Have you been doing a project that other OCA members would be interested in learning about? Have you participated in an astronomical activity that would entertain the other OCA'ers? For example, perhaps you have:

- Taken an astronomically-oriented expedition (stargazing at Lake Titicaca?)
- Made a telescope or an optical instrument (a handicap-friendly telescope?)
- Conducted a research project or astronomical investigation (photometry? double-stars? spectroscopy?)
- Exposed the stars at a unique "outreach" venue
- Made an unusual observation (anyone discover a supernova or asteroid?)
- Participated in a special activity by one of our Special Interest Groups (visited a major observatory? Used a remotely-operated telescope?)

If you have, then it's time to start thinking about your presentation for the "Member's Night" December OCA Meeting. Don't keep it to yourself: Inquiring minds will want to know what you've been doing in the dark!

The OCA is filled with inventive people doing new, intriguing, and wonderful things. We'd be delighted if you would present a 10-15 minute description of one of your astronomical activities at the December OCA meeting. To add your name to the presenter's list, please contact Craig Bobchin by e-mail at ETX_Astro_Boy@sbcglobal.net



This image of NGC 5128 was taken by Bill Hall using an 6-inch f/5 Newtonian with an ST-237A camera (10-minute exposure) from Anza, CA, March 17th, 2007

FOR SALE: Celestron CR 150hd Duel Axis Drive CG5 Mount. New motors and hand controller; roll-about hard case. Nice condition. $750.00
Meade LXD55 8 inch Schmidt Newtonion. Recent complete service by Meade, new Autostar, etc. Roll-about hard case. Nice condition. $800.00
Contact Steve Bird 562 234-2157

FOR SALE: Meade 8-inch LX200 GPS w/all factory accessories; aluminum channel tripod w/pneumatic tires. Contact Bob Krause at 949-248-3111

ABOUT OUR SPEAKER

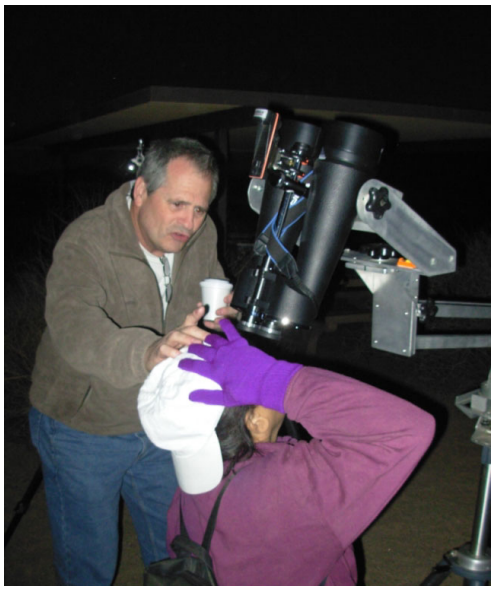
In 2004 Frank Busutil wondered what concepts do blind individuals have of the universe and could they intellectually enjoy it. This question was presented to the Los Angeles Braille Institute and the answer was astonishing.

Not only could blind individuals enjoy the universe, but many could actually see it.

A free outreach program, Project Bright Sky along with the Pomona Valley Amateur Astronomers provides visual astronomy opportunities, astronomy courses and summer camp observations for blind individuals.

Through Project Bright Sky telescopes and technologies many blind individuals are seeing the universe for the first time since loosing their sight. Others are registering mental images of the universe that they will carry for life, as they are seeing the universe for the last time before progressive eye disease renders them completely blind. Individuals who cannot see print on paper are able to see craters and mountains on the moon, Jupiter, Saturn and through CCD video observing many deep sky objects.

With moderate amateur astronomer equipment and technologies, legally blind individuals see more in space than they do in their everyday lives on earth



(continued from page 7)
computer failures is spiky power from the new solar panel power regulators. Problems also occurred with folding up solar arrays that had to be moved, but these are expected to be solved with known techniques by space walking astronauts. The shuttle brought astronaut Clay Anderson to join the ISS crew, replacing Suni Williams, who just set the record for the longest mission in space by a woman (over 6 months).

Instant AstroSpace Updates

The **most distant known quasar** has been found during the quasar survey being conducted on the CFH Telescope in Hawaii, and confirmed by the Gemini Telescope in Chile. Its redshift is 6.43, implying the light took about 13 billion years to reach us, and the mass of the black hole powering the quasar is estimated at half a billion Solar masses.

Even though the **James Webb Space Telescope**, scheduled for launch in 2013, will orbit about a million miles from Earth, far beyond where astronauts could repair it, NASA is considering putting grapple fixtures on it to allow automated spacecraft to latch on and perform repairs.

The fifth and final space shuttle mission to **repair the Hubble** Space Telescope has been scheduled for September 10 of next year. Atlantis will spend 11 days with 7 astronauts aboard. Hubble is expected to last until 2013 with these repairs.

Japan's **Selene** mission is scheduled for launch by the time you read this. It consists of a low lunar orbiter to survey for minerals, elements, topology, and gravity; a high orbiter to measure position and precession; and a data relay orbiter. ■

THIRD ANNUAL SOUTHERN CALIFORNIA ASTRONOMY EXPO 2007

SCAE07 Seminar Symposium & Star Party – Saturday, July 14, 2007

Don't miss OPT's Third Annual Southern California Astronomy Expo Seminar Symposium and Star Party on Saturday, July 14th, 2007! Experience FREE presentations from 11:00AM until 5:30PM by popular speakers such as Dr. Kevin Grazier, Investigation Scientist for the Cassini-Huygens Mission to Saturn & Titan and Science Advisor for Battlestar Galactica; Tony Hallas, one of the best astrophotographers of our time; cinematographer and solar specialist, Gary Palmer; local astronomer, lecturer, and photographer, Dennis Mammana; and last but not least, Cassini-Huygens Mission designer, John C. Smith! Inquisitive adults of all ages and experience levels will enjoy the entire seminar. At the end of the day, the winners of the First Annual SCAE Astro Shootout Photo Contest will be announced, and cash prizes awarded! All entries are welcome...you have till July 1st to submit photographs. For the evening festivities, be our guests for a FREE BBQ dinner starting at 7:00PM at the San Pasqual Battlefield State Historic Park, located just east of the Wild Animal Park, and then star party with OPT and our guests from dusk till 11:00PM.

SCAE07 Telescope Demonstration & Star Party – Saturday, July 28, 2007

See all the latest telescope equipment at the Third Annual Southern California Astronomy Expo Telescope Demonstration & Star Party on Saturday, July 28, 2007 beginning at 10:00AM. Join over twenty manufacturers of fine telescopes, CCD cameras, and accessories in the OPT parking lot for a day of fun, education, demonstrations, and short talks on Astrophotography & CCD Imaging by a variety of manufacturers. A free pizza lunch will be provided that afternoon, complements of OPT. Stay for our HUGE Giveaway Raffle, which includes over $10,000 in prizes! Raffle tickets are FREE to attendees, but you must be present for the drawing to have a chance to win. A star party in the parking lot will begin at dusk (weather permitting) and run through 10:00PM. Get a chance to look through lots of telescopes and see astrophotography in action!

Visit www.optcorp.com/scae.aspx for the latest information on SCAE07, including a growing list of prizes, seminar topics, star party information, directions, and more.

■

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www.ocastronomers.org
The Newsletter of the Orange County Astronomers

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OCA Website: http://www.ocastronomers.org **STARLINE 24-hr recording: 714-751-6867** **ANZA OBSERVATORY: 951-763-5152**