IO – July 2007

Issue 2007-07
Eugene Astronomical Society

Eugene Astronomical Society,
Annual Club Dues $25, Board Members:
President: Sam Pitts - 688-7330
Secretary: Jerry Oltion - 343-4758
Jacob Strandlien, Tommy Lightning Bolt
& Fred Domineack

www.eugeneastro.org
EAS is a Proud Member of:
The Astronomical League
The World's Largest Federation of Amateur Astronomers

IO editor- sampitts@comcast.net 688-7330
Io *(EYE-oh) is nearest to Jupiter and fastest orbiting of the four Galilean moons*

Monday- July 2nd MEETING

EUGENE ASTRONOMICAL SOCIETY
Held at:
"Science Factory Children's Museum & Planetarium"
2300 Leo Harris Parkway, Eugene
SW of Autzen Stadium

Members to Share Equipment & Knowledge

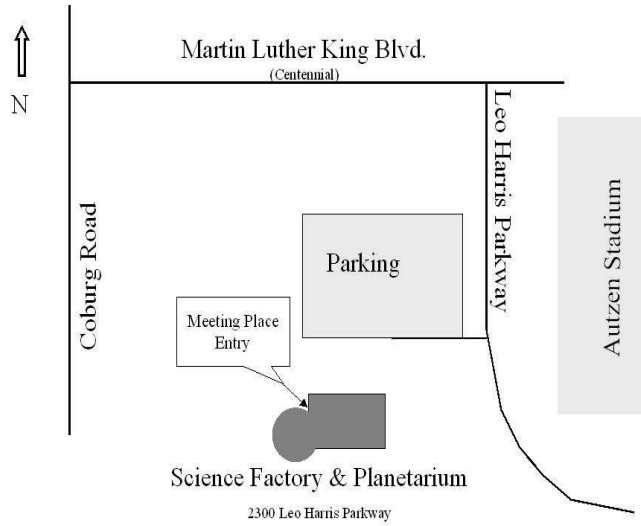
EAS members are asked to bring in equipment, books, etc. to share and explain at our next meeting. This is a return to long past meetings where EAS would bring in various items related to astronomy and share them with fellow members and meeting attendees. David Davis of Corvallis will be bringing in a 16" *ultrathin* telescope he has made along with a mirror grinding machine; Aaron will bring in some wonderful sketches of the night sky.

We always encourage audience participation during our meetings. EAS meetings are traditionally times when we learn about astronomy and share other's experiences and knowledge of astronomy and the night sky. This will be a very fun and informal forum to learn more about our hobby. I will have a laptop & LCD setup if anyone wishes to bring anything to show.

Jacob Strandlien will keep you up to date with his monthly presentation on current events and news in Space & Astronomy. Jacob always has some interesting news and great images to share with the group.

Come and enjoy the wonders of the night sky with the Eugene Astronomical Society at The Science Factory's comfortable Planetarium. The meeting will begin at **7:00 PM** in the Planetarium.

The Eugene Astronomical Society is a group of amateur astronomers dedicated to observing the night sky, learning about the Universe, and sharing that understanding and appreciation of astronomy with students and the general public. EAS has been doing astronomy education and public outreach for many years. The EAS holds club meetings on the first Monday of each month at 7 PM at The Science Factory Children's Museum & Planetarium. Guests are welcome to visit; we ask for a $1 guest contribution. Meetings feature speakers with presentations on topics of interest to club members, current viewing opportunities, telescope help, and star party planning.



EAS thanks the Science Factory Children's Museum & Planetarium for providing the Planetarium for our monthly meetings.

Observing in July

July 7	July 14	July 21	July 30
Mercury Rise 5:03 AM	Mercury Rise 4:34 AM	Mercury Rise 4:21 AM	Mercury Rise 4:35 AM
Venus Set 10:56 PM	Venus Set 10:31 PM	Venus Set 10:02 PM	Venus Set 9:17 PM
Mars Rise 1:45 AM	Mars Rise 1:30 AM	Mars Rise 1:15 AM	Mars Rise 12:55 AM
Jupiter Set 3:25 AM	Jupiter Set 2:55 AM	Jupiter Set 2:26 AM	Jupiter Set 1:50 AM
Saturn Set 10:56 PM	Saturn Set 10:30 PM	Saturn Set 10:04 PM	Saturn Set 9:32 PM
Uranus Rise 11:45 PM	Uranus Rise 11:17 PM	Uranus Rise 10:49 PM	Uranus Rise 10:14 PM
Neptune Rise 10:40 PM	Neptune Rise 10:12 PM	Neptune Rise 9:44 PM	Neptune Rise 9:08 PM
Pluto Rise 7:00 PM	Pluto Set 4:28 AM	Pluto Set 4:00 AM	Pluto Set 3:24 AM

All times: U.S. Pacific Daylight Time (March 11-November 4, 2007) = UT - 7 hours. Pacific Standard Time (Nov.-March) = UT-8

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
7/1/2007	22:23	06:18	05:33	20:59	03:09	23:23
7/2/2007	22:53	07:32	05:34	20:59	03:10	23:22
7/3/2007	23:18	08:47	05:34	20:59	03:11	23:21
7/4/2007	23:40	10:03	05:35	20:58	03:13	23:20
7/5/2007	24:00	11:18	05:36	20:58	03:14	23:20
7/6/2007	------	12:32	05:36	20:58	03:15	23:19
7/7/2007	00:20	13:48	05:37	20:57	03:16	23:18
7/8/2007	00:42	15:06	05:38	20:57	03:18	23:17
7/9/2007	01:08	16:26	05:38	20:57	03:19	23:15
7/10/2007	01:41	17:47	05:39	20:56	03:20	23:14
7/11/2007	02:22	19:01	05:40	20:55	03:22	23:13
7/12/2007	03:16	20:05	05:41	20:55	03:23	23:12
7/13/2007	04:21	20:55	05:42	20:54	03:25	23:10
7/14/2007	05:34	21:34	05:42	20:54	03:27	23:09
7/15/2007	06:49	22:03	05:43	20:53	03:28	23:08
7/16/2007	08:03	22:26	05:44	20:52	03:30	23:06
7/17/2007	09:13	22:45	05:45	20:51	03:31	23:05
7/18/2007	10:19	23:03	05:46	20:51	03:33	23:03
7/19/2007	11:24	23:20	05:47	20:50	03:35	23:01
7/20/2007	12:27	23:37	05:48	20:49	03:37	23:00
7/21/2007	13:31	23:56	05:49	20:48	03:38	22:58
7/22/2007	14:35	------	05:50	20:47	03:40	22:56
7/23/2007	15:42	00:17	05:51	20:46	03:42	22:55
7/24/2007	16:48	00:44	05:52	20:45	03:44	22:53
7/25/2007	17:52	01:19	05:53	20:44	03:46	22:51
7/26/2007	18:50	02:02	05:54	20:43	03:47	22:49
7/27/2007	19:41	02:56	05:55	20:42	03:49	22:47
7/28/2007	20:21	04:02	05:56	20:41	03:51	22:45
7/29/2007	20:54	05:15	05:57	20:40	03:53	22:43
7/30/2007	21:22	06:31	05:58	20:39	03:55	22:41
7/31/2007	21:45	07:48	05:59	20:38	03:56	22:39

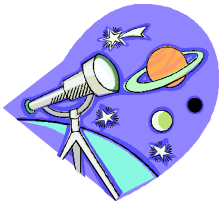
Current Occultations & Other Events

Visit Derek C Breit's web site

"BREIT IDEAS Observatory"

http://www.poyntsource.com/New/Regions/EAS.htm

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often.



The Nights are getting Longer!

All times are for Eugene, Oregon Latitude 44º 3' 8" Longitude 123º 5' 8" for listed date

Events

JULY 2007

1	Kennedy Space Center's 45th Birthday (1962)
2	Jul 02 - Comet Kowal 2 Near-Jupiter Flyby (0.297 AU); 13th International Symposium on Particles, Strings and Cosmology (PASCOS 07), London, United Kingdom
4	Asteroid 2007 MB4 Near-Earth Flyby (0.019 AU) 1.76 Million Miles, only 7x the distance of our moon; Asteroid 2007 HE15 Near-Earth Flyby (0.059 AU); 10th Anniversary (1997), Mars Pathfinder, Mars Landing
6	320th Anniversary (1687), Isaac Newton's Principia Published
7	Dawn Delta 2 Launch (Asteroid Orbiter); Direct-TV 10 Proton M Launch; Earth At Aphelion (1.017 AU From Sun); Asteroid 2006 JY26 Near-Earth Flyby (0.081 AU)
8	Jul 08 - 15th Anniversary (1992), Comet Shoemaker-Levy 9 Near-Jupiter Flyby (0.0008 AU), Comet Breakup
9	7th International Conference on Mars, Pasadena, California
10	Asteroid 2006 BZ147 Near-Earth Flyby (0.071 AU); Jul 10 - 45th Anniversary (1962), **Telstar 1** Launch
11	Golden State Star Party 2007, Mt. Lassen National Park, California; Shingletown Star Party, Shingletown, California
12	**Table Mountain Star Party**, Table Mountain, Washington; Northwest Region of the Astronomical League (NWRAL) Star Party, Goldendale, Washington
14	Comet P/2002 O5 (NEAT) Near-Earth Flyby (0.201 AU) magnitude 17.2; 3rd Annual Southern California Astronomy Expo Seminar Symposium and Star Party, Oceanside, California
16	Moon Occults Saturn- (*HONOLULU HI 20 35 28* UT)
19	Cassini, Titan Flyby; 40th Anniversary (1967), Explorer 35 Launch (Moon Orbiter)
21	Event: Meet the Real Space Cowboys, Balboa Park, California
22	35th Anniversary (1972), Venera 8, Venus Landing
23	Workshop: Science in the Era of Thirty Meter Telescope, Irvine, California; Conference: Nuclear Astrophysics - Beyond the First 50 Years, Pasadena, California
24	Venus Express, End of Primary Mission; Asteroid 2006 FH36 Near-Earth Flyby (0.081 AU)
29	South Delta-Aquarids Meteor Shower Peak; Asteroid 2007 DT103 Near-Earth Flyby (0.024 AU) 2.2 million miles
30	Globalstar-10 (No. 69-72) Soyuz FG-Fregat Launch; Asteroid 2001 WM15 Near-Vesta Flyby (0.010 AU) 929,000 miles
	Conference: Dark Matter - From The Cosmos To The Laboratory, Menlo Park, California

AU=Astronomical Unit (92,955,800 miles)

Star Party - July 21st (Saturday): Cascara State Campgrounds, Dexter, Oregon

DaVinci Days- July 20-21-22: Annual exposition/celebration of technology and art held at OSU in July.

Thank You Castle Storage

Board member Tommy Lightning Bolt was instrumental in getting a storage unit from the owners of Castle Storage for EAS to store its telescopes and equipment. EAS would like to thank Castle Storage for their generosity and support for our group. Please give them a call if you need a storage space and tell your friends. They are great people and offer secure and quality units.

Join the EAS mail list→http://eugeneastro.org/mailman/listinfo/org.eugeneastro.general

Keep up to date on opportunities to join local amateur astronomer outings to observe the night skies. This is a great opportunity to get advice in setting up your own equipment from seasoned veterans or just to look through different scopes. They always have fun and enjoy helping newcomers.

New Web-Master

First, I would like to thank Richard Boyd for the many hours he has devoted to maintaining our web-page. Richard is now working with our new Web Master Jacob Strandlien to ensure a smooth transition. Jacob has taken over duties as EAS Web Master and has already implemented a new calendar. Please thank both of these EAS members when you see them for their hard work and devotion to our club.

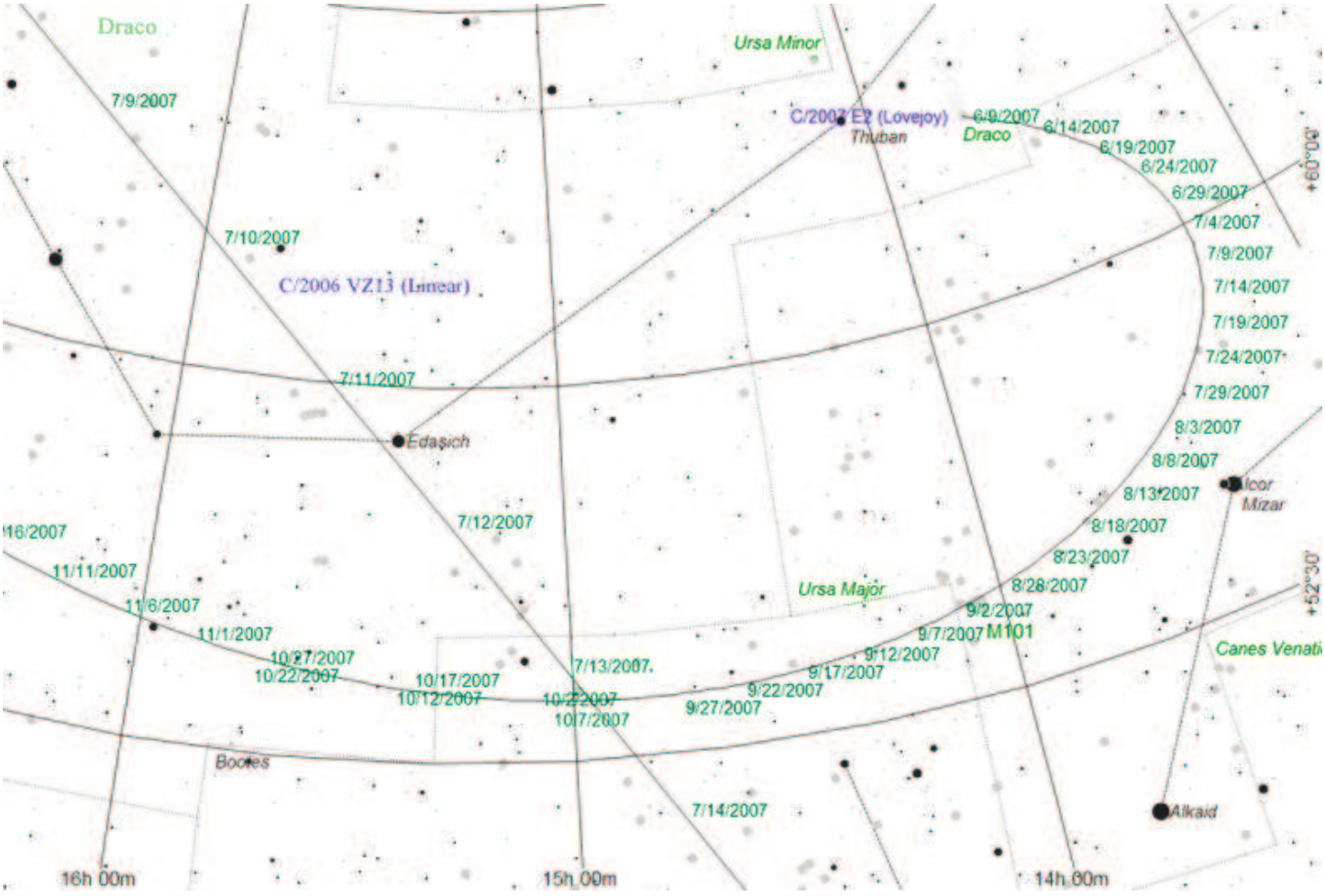
-Sam

Two Challenging Comets

By Frank Casebolt

Comet C/2006 VZ13 (Linear) will be about 12.3 mag on June 1, 11.2 mag on June 15, and 9.8 mag on June 30. It is a fast moving comet and should be easy to see flight through the heavens within one or two hours of observing. On June 14, the comet will be just west of the small galaxy cluster NGC 5785, 5783, and 5788. Perihelion is in August.

Comet C/2007 E2 (Lovejoy) is about 11.8 mag on June 1, 12.7 mag on June 15, and 13.6 mag on June 30. It is currently located in Ursa Major and enters into Bootes early September. This is a slow moving comet and you can find it above the handle of the Big Dipper clear through August. It will be very close to M-101 August 31. It reached perihelion on March 27th (1.09 AU), and apogee on April 25th (.44 AU).



Chew on This

By Diane K. Fisher

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.

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

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.

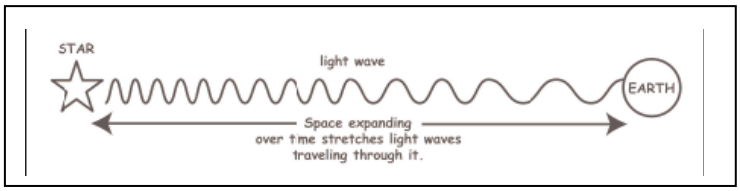
This article was written by Diane K. Fisher and provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Space Place Astronomy Club Column

http://spaceplace.jpl.nasa.gov/astro_clubs

Clues from Ancient Light

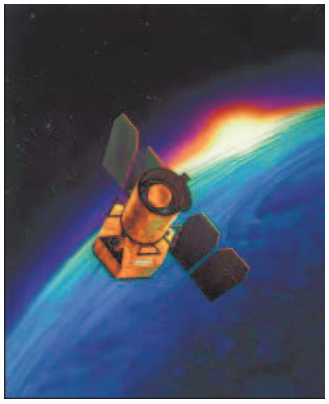
Some people are good at telling other people's ages. They can look at you and know you are 9 years old or 22 or 49 or 99. How? They read the clues: your size, shape, proportion, gray hair (or no hair), wrinkles, how you talk, and how you act. Astronomers know how to tell the ages of the stars—or least the ages of the stars' light. What clues do they use? Light changes as it travels through space and time. It's as if, like aging humans, the light gets "tired." Light that has been traveling a long, long time (say, billions of years) starts looking pretty tired! Astronomers say that the light is ***red-shifted***, because red light has the least energy of all the colors of the light we can see with our eyes. No matter how "old and tired" light is, it always travels at the same speed in space: 300,000 kilometers (or 186,000 miles) per second (in round umbers). That means it takes some amount of time—a little or a lot—for light to get anywhere. The distance light can travel in one Earth year is called a ***light year***. A light year is very long distance: around 9 trillion kilometers (6 trillion miles).



Light travels in waves, just as energy traveling through the ocean pushes the water into waves. But as light waves travel through space, they gradually get stretched out. That is because, along with the universe, space itself is expanding and stretching the distances between things.

GALEX Looks Back in Time

GALEX (short for Galaxy Evolution Explorer) is a space telescope that was launched into orbit around Earth in 2003. From space, GALEX gets a great view of the ultraviolet light from stars, without Earth's atmosphere getting in the way. GALEX is now looking at most of the galaxies in the Universe. A galaxy is a grouping of stars. All but a few stars in the universe live in galaxies. Our Sun is just one of at least 200 billion stars in our own Milky Way Galaxy. GALEX sees starlight that has been traveling for just a few years from stars that are "only" a few trillion kilometers away. But it also sees really "tired" starlight that has been traveling over 10 billion years! That is more than two-thirds of the age of the whole Universe!



So GALEX is seeing galaxies as they were 10 billion years ago, as well as how the nearby galaxies looked just a few hundred thousand years ago. Just as you look younger in a picture of you from several years ago, GALEX sees pictures of galaxies when they were much younger than now. So astronomers can look at the young galaxy pictures from far away (and long ago), compare them with pictures of older galaxies nearby (very recent) and see how galaxies and their stars are born, age, and die over time. They can learn how galaxies *evolve*.

How Old Do I Look? **(See Link Below for additional pages on the internet *)**

Can you tell how old something is just by looking at it? The squares on the next page contain pictures of old things, new things, and every age in between things. Cut out the squares. For each row (A – F) of six pictures from a single category, like nature or animals, arrange the objects by age, oldest on the left, youngest on the right. Some things may be a little hard to compare, but make a good guess anyway. At least be able to explain why your arrangement by age could be right! Compare your best guesses to ours:

* **http://spaceplace.jpl.nasa.gov/en/kids/downloads/galex_activity.**pdf ***Learn More***

Books: *Universe* by Robin Kerrod, DK EYEWITNESS BOOKS, 1st ed. (March 2003), ISBN: 0789492385 (ages 9-12).
Galaxies by Seymour Simon, HarperTrophy, Reprint ed., 1991, ISBN: 0688109926 (ages 9-12)
Our Galaxy and the Universe by Ken Gruan et al., Ken Press, 2002, ISBN: 1928771084 (ages 9-12).

Websites: GALEX Website, **http://www.galex.caltech.edu**. See "Image Gallery." The Space Place, **http://spaceplace.nasa.gov**. Under "Projects," see "Galactic Mobile" and "Galaxy Montage" activities.

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

HOME

Vendor Registration Information Here

First Aid Volunteers Registration Here

If you have questions or problems contact the ospdirector

OSP 2007 PRE-REGISTRATION

Pre-Registration Prices BEFORE July 20th

Registrations	Clothing	Misc
Adult $45 Ages 12-17 $15 Ages 6-11 $5 Ages 0-5 Free	T-shirts $14 Sweatshirts $20 Hooded Sweatshirts $40	8x10 Group Photo $8 10x14 Group Photo $14 Shower $9 each Star Dinners $10 each *Thursday - Baked Ham Dinner* *Friday - Meatball Dinner* *Saturday - BBQ Chicken Dinner*

PRE-REGISTRATION BY MAIL	PRE-REGISTRATION BY CREDIT CARD USING PAYPAL
Fill out the form on-screen and print it.	**isn't quite ready yet - please check back next week** There will be a $3 charge for using Paypal.

The Deadline for Pre-Registration is July 20th

On-Site Prices AFTER July 20th

Registrations	Clothing	Misc
Adult $55 Ages 12-17 $25 Ages 6-11 $15 Ages 0-5 Free	Available only by Pre-Registration T-shirts, Sweatshirts and Hooded Sweatshirts ***might*** be available at the Information Tent after 10am on Saturday	Group Photo 8x10 $8 Group Photo 10x14 $14 Showers $9 Star Dinners ***might*** available

Cash or Check only at OSP - No Credit or Debit Cards

See June 2007 Issue of IO for detailed map and additional information:

http://www.eugeneastro.org/pdf/iojun07

Imaging Technology Breakthrough

Next Generation Color Filter Patterns Deliver Higher Quality Photos Under Low-Light Conditions

ROCHESTER, NY, June 14, 2007 - Eastman Kodak Company (NYSE:EK) today introduced a groundbreaking advancement in image sensor technology that will help make dark, blurry digital photos a thing of the past.

Kodak's new sensor technology provides a significant increase in sensitivity to light when compared to current sensor designs. With this new technology, users will realize a 2x to 4x increase in sensitivity (from one to two photographic stops), which will improve performance when taking pictures under low light and reduce motion blur when imaging moving subjects. In addition, this technology enables the design of smaller pixels (leading to higher resolutions in a given optical format) while retaining imaging performance.

This breakthrough advances an existing Kodak technology that has become a standard in digital imaging. Today, the design of almost all color image sensors is based on the "Bayer Pattern," an arrangement of red, green, and blue pixels that was first developed by Kodak Scientist Dr. Bryce Bayer in 1976. In this design, half of the pixels on the sensor are used to collect green light, with the remaining pixels split evenly between sensitivity to red and blue light. After exposure, software reconstructs a full color signal for each pixel in the final image.

Kodak's new proprietary technology builds on the existing Bayer Pattern by adding panchromatic or "clear" pixels to the red, green, and blue pixels already on the sensor. Since these pixels are sensitive to all wavelengths of visible light, they collect a significantly higher proportion of the light striking the sensor. The remaining red, green, and blue pixels are then used to record the color information of the scene.

To reconstruct a full color image, Kodak has also developed new software algorithms specifically designed to work with the raw data generated from these new image sensors. These sophisticated algorithms use the more sensitive panchromatic pixels to act as the luminance channel of the final image, and derive chrominance information from the color pixels on the sensor. Leveraging over 30 years of Kodak image science, these new algorithms support the increased sensitivity provided by these new pixel patterns, while retaining the overall image quality and color fidelity required by customers.

"This represents a new generation of image sensor technology and addresses one of the great challenges facing our industry: how to capture crisp, clear digital images in a poorly lit environment," said Chris McNiffe, General Manager of Kodak's Image Sensor Solutions group. "This is a truly innovative approach to improving digital photography in all forms, and it highlights Kodak's unique ability to differentiate its products by delivering advanced digital technologies that really make a difference to the consumer."

Kodak is beginning to work with a number of leading companies to implement this new technology in system-wide solutions and to streamline the design-in process.

Kodak is developing CMOS sensors using this technology for consumer markets such as digital still cameras and camera phones. As the technology is appropriate for use with both CCD and CMOS image sensors, however, its use can be expanded across Kodak's full portfolio of image sensors, including products targeted to applied imaging markets such as industrial and scientific imaging. The first Kodak sensor to use this technology is expected to be available for sampling in the first quarter of 2008.

For additional information regarding this technology, please contact Image Sensor Solutions, Eastman Kodak Company at (585) 722-4385 or by email at imagers@kodak.com. www.kodak.com/go/imagers.

Image by Eastman Kodak

Article from Astromart: http://www.astromart.com

Astromart is a great place to buy & sell astronomy equipment, join in equipment forums and learn more about various products and astronomical related topics.