

IO – November 2007

Issue 2007-12
Eugene Astronomical Society



Eugene Astronomical Society,
Annual Club Dues \$25, Board Members:
President: Sam Pitts - 688-7330
Secretary: Jerry Olthion - 343-4758
Jacob Strandlien, Tony Dandurand,
Tommy Lightning Bolt

www.eugeneastro.org

EAS is a Proud Member of:

The Astronomical League
The World's Largest Federation of Amateur Astronomers

Wednesday- December 5th MEETING EUGENE ASTRONOMICAL SOCIETY

Held at:

Science Factory Children's Museum & Planetarium
2300 Leo Harris Parkway, Eugene
SW of Autzen Stadium

White Elephant Sale

It's the end of the year and we will have our traditional *White Elephant Sale*, so bring those items that have been collecting dust to trade or sell. EAS will also make available some items for sale from its inventory of scopes and parts. This EAS table will have reasonable priced astronomy equipment that the club no longer needs in its lending program. You are welcome to donate any items to this table as the proceeds go directly to EAS. So come on out and bring any astronomy articles you want to sell or donate.

There will be no formal meeting or program and after the meeting we can gather at "The North Bank".

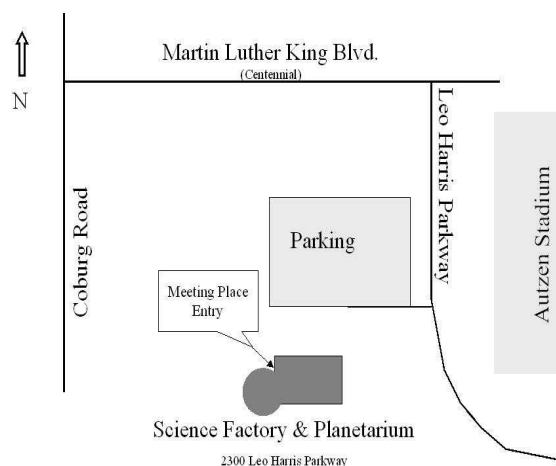
We always encourage audience participation during our meetings. EAS meetings are traditionally times when we learn about astronomy and share others' experiences and knowledge of astronomy and the night sky.

Come and enjoy the wonders of the night sky with the Eugene Astronomical Society at The Science Factory's comfortable Planetarium.

Don't forget to Pay your Dues & support EAS!

EAS general meetings will now be on the 1st Wednesday of each month at 7:00 PM except for holidays, 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.



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



Observing in December

December 1	December 9	December 17	December 23
Mercury Rise 6:42 AM	Mercury Rise 7:17 AM	Mercury Set 4:27 PM	Mercury Set 4:43 PM
Venus Rise 3:36 AM	Venus Rise 3:53 AM	Venus Rise 4:10 AM	Venus Rise 4:24 AM
Mars Rise 6:22 PM	Mars Rise 5:38 PM	Mars Rise 4:51 PM	Mars Rise 4:16 PM
Jupiter Set 5:39 PM	Jupiter Set 5:15 PM	Jupiter Set 4:51 PM	Jupiter Rise 7:44 AM
Saturn Rise 11:29 PM	Saturn Rise 10:58 PM	Saturn Rise 10:27 PM	Saturn Rise 10:03 PM
Uranus Set 12:14 AM	Uranus Set 11:40 PM	Uranus Set 11:09 PM	Uranus Set 10:46 PM
Neptune Set 9:59 PM	Neptune Set 9:29 PM	Neptune Set 8:58 PM	Neptune Set 8:35 PM
Pluto Set 6:15 PM	Pluto Set 5:45 PM	Pluto Set 5:15 PM	Pluto Rise 7:05 AM

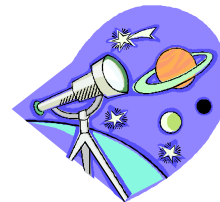
All times: Pacific Standard Time (Nov.-March) = UT-8 or U.S. Pacific Daylight Time (March 11-November 4, 2007) = UT - 7 hours.

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

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.



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

Events

DECEMBER 2007

1	Asteroid 2006 KK89 Near-Earth Flyby (0.090 AU)
2	Cassini, Distant Flyby of Telessto & Mimas; 4th Spitzer Science Center Conference: The Evolving Interstellar Medium in the Milky Way and Nearby Galaxies, Pasadena, California
3	Conference: Cosmic Cartography - Mapping the Universe from the Big Bang to the Present, Chicago, Illinois
5	Cassini, Titan Flyby; Space Investment Summit 3, San Jose, California
6	STS-122 Launch, Space Shuttle Atlantis, ESA's Columbus Laboratory (International Space Station 1E); Cosmo-Skymed 2 Delta 2 Launch; 2nd Eilene M. Galloway Symposium on Critical Issues in Space Law, Washington DC; Web Seminar: Are We Alone? (symposia@nsta.org)
7	Asteroid 2006 US216 Near-Earth Flyby (0.052 AU); 35th Anniversary (1972), Apollo 17 Launch (Last Manned Mission to the Moon)
8	Asteroid 2007 VD184 Near-Earth Flyby (0.020 AU) 1.8 million miles; Asteroid 2007 WU3 Near-Earth Flyby (0.081 AU)
10	NROL-24 Atlas 5 Launch; Workshop: Strings and Superstrings in Observational Cosmology, Paris, France
11	1st Subaru International Conference: Panoramic Views of Galaxy Formation and Evolution, Hayama, Japan
12	40th Anniversary (1967), Pioneer 8 Launch
13	Geminids Meteor Shower Peak
14	45th Anniversary (1962), Mariner 2, Venus Flyby; 200th Anniversary (1807), Weston Meteorite Fall
15	Attn: Teachers -Deadline: "Life and Work on the Moon" Student Art Contest; Asteroid 2005 WX Near-Earth Flyby (0.055 AU)
16	Moon Occults Asteroid 2 Pallas; Asteroid 2003 FJ8 Near-Earth Flyby (0.062 AU); Asteroid 5720 Halweaver Closest Approach To Earth (0.791 AU); Arthur C. Clarke's 90th Birthday (1917); Edward Barnard's 150th Birthday (1857)
18	Horizons 2/ Rascom QAF-1 Ariane 5 Launch
19	Mars Closest Approach To Earth (0.589 AU) 54.75million miles
20	Cassini, Titan Flyby; GPS 2RM F-5 Delta 2 Launch
22	Winter Solstice , 06:08 UT ; Ursids Meteor Shower Peak
23	Progress M-62 Soyuz U Launch (International Space Station 27P); 335th Anniversary (1672), Giovanni Cassini's Discovery of Saturn Moon Rhea
24	Moon Occults Mars; Mars At Opposition
25	Cosmos-Glonass M12/M13/M14 Proton K-DM2 Launch; Possible UFO sighting in AM
26	Asteroid 2005 HB4 Near-Mars Flyby (0.031 AU)
28	Asteroid 2007 VY7 Near-Earth Flyby (0.068 AU); Asteroid 2003 YT70 Near-Earth Flyby (0.075 AU); Asteroid 2007 DD Near-Earth Flyby (0.095 AU)
31	Asteroid 2005 YO3 Near-Earth Flyby (0.059 AU)

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

Star Parties:

None Scheduled

December 21; Eugene Hotel Winter Solstice Presentation by EAS

January 28; Cambell Center 155 High St, Eugene, 12:45 PM-Astronomy Talk by EAS



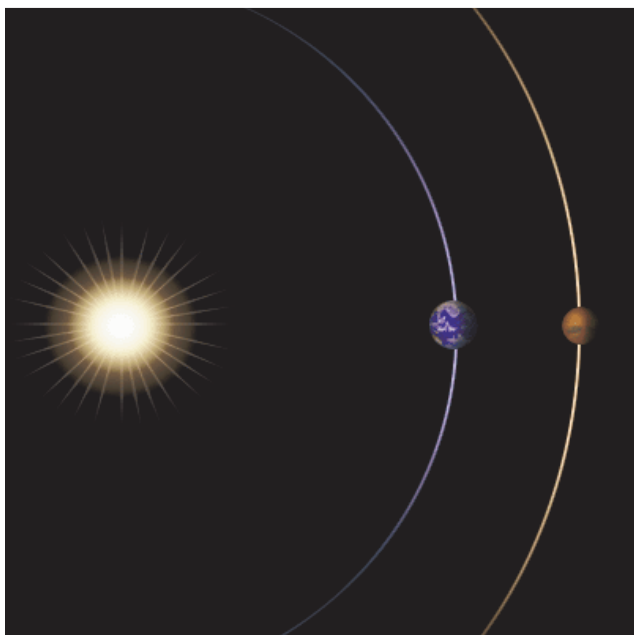
Thank You Castle Storage

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.

Mars in the Night Sky

Thanks to NASA for this Article & Images

Like all the planets in our solar system, Earth and Mars orbit the sun. But Earth is closer to the sun, and therefore races along its orbit more quickly. Earth makes two trips around the sun in about the same amount of time that Mars takes to make one trip. So sometimes the two planets are on opposite sides of the sun, very far apart, and other times, Earth catches up with its neighbor and passes relatively close to it.

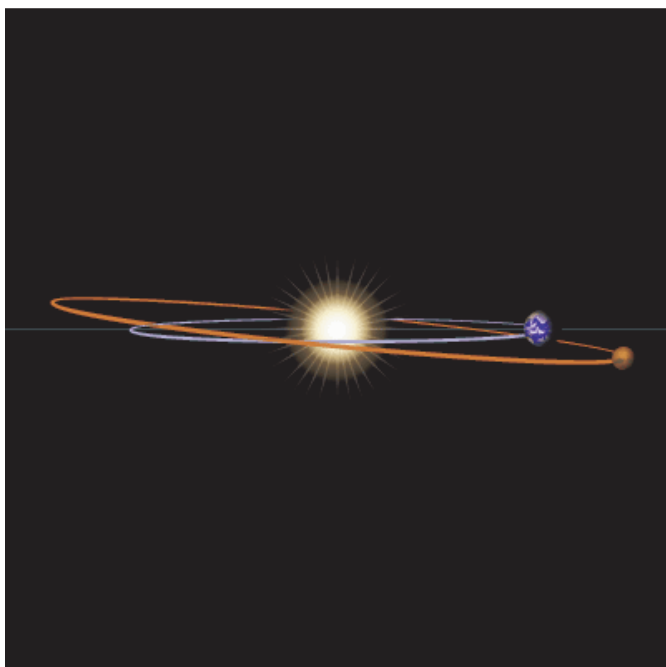


During opposition, Mars and the sun are on directly opposite sides of Earth. From our perspective on our spinning world, Mars rises in the east just as the sun sets in the west. Then, after staying up in the sky the entire night, Mars sets in the west just as the sun rises in the east. Since Mars and the sun appear on opposite sides of the sky, we say that Mars is in "opposition."

Mars oppositions happen about every 26 months. Every 15 or 17 years, opposition occurs within a few weeks of Mars' perihelion (the point in its orbit when it is closest to the sun).

An opposition can occur anywhere along Mars' orbit. When it happens while the red planet is closest to the sun (called "perihelic opposition"), Mars is particularly close to Earth. If Earth and Mars both had perfectly stable orbits, then each perihelic opposition would bring the two planets as close as they could be. That's almost the way it is.

But once again, nature throws in a few complications. Gravitational tugging by the other planets constantly changes the shape of our orbits a little bit. Giant Jupiter especially influences the orbit of Mars. Also, the orbits of Earth and Mars don't lie in quite the same plane. The paths the planets take around the sun are slightly tilted with respect to each other.



So, with all these added factors, some perihelic oppositions bring us closer together than others. The 2003 opposition was the closest approach in almost 60,000 years!

Mars' orbit is more elliptical than Earth's, so the difference between perihelion and aphelion is greater. Over the past centuries, Mars' orbit has been getting more and more elongated, carrying the planet even nearer to the sun at perihelion and even farther away at aphelion. So future perihelic oppositions will bring Earth and Mars even closer. But we'll still have bragging rights for awhile. Our 2003 record will stand until August 28, 2287!

Going My Way?

Not many endeavors require that you plan the mode of transportation before you even know what it is you are transporting. But weighing the physics and economics of getting any sort of cargo to space is a major part of designing a space mission.

It's one of the first issues that NASA's New Millennium Program (NMP) considers when planning a new mission. NMP has the forward-looking job to identify promising new technologies for space exploration. It then helps to mature the technology so it will be available to space missions of the future. If the technology cannot be tested adequately on Earth, the last part of this process is to actually send the technology into space. With carefully documented test results, future mission planners can confidently incorporate the new technology into their designs.

But where to begin? On call from the start, Linda Herrell is the New Millennium Program Architect. Given a list of proposed technologies, she has the job of figuring out the feasibility of wrapping a mission around them.

"We might be considering six or more technologies, anything from solar panels to imagers to masts for solar sails to more intelligent software. Of those, we may choose four. My job is to answer the question—can the selected technology be transported to and operated in space within the constraints of a low-cost technology validation project?"

Along with the list of possible mission payloads (the technologies), Linda also has a list of spacecraft to put them on, as well as a list of launch vehicle parameters. All she has to do is try them out in every possible combination (of which there are thousands) and see what might work.

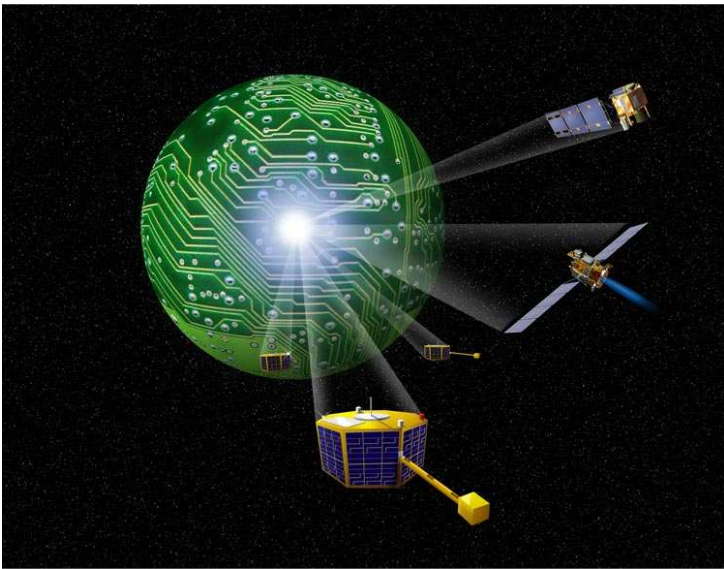
"Fortunately, we have a software tool to help with this analysis," says Linda. When it comes down to it, her job is primarily to figure out how to get the technologies into space.

"Sometimes, it's like figuring out how to get across town when you don't have your own car. You have to get creative."

She keeps a database of all possible options, including riding piggyback on another spacecraft, hitching a ride on a launch vehicle as a secondary payload, or sharing a launch vehicle with other NASA, Department of Defense, or even commercial payloads.

Her assessment is but one of a gazillion factors to be considered in planning a mission, but it is indeed one of the very first "details" that forms the foundation for the rest of the mission.

Find out some of the technologies that NMP has already validated or is considering at nmp.nasa.gov/TECHNOLOGY/innovative-tech.html. Kids will enjoy watching Linda's cartoon alter-ego talk about her job at spaceplace.nasa.gov/en/kids/live.



NASA's New Millennium Program selects breakthrough technologies that will be of the greatest use to future space and Earth science missions and that are perceived to be risky to the first user.

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.

Astrophotos by EAS club members

