

Seattle Astronomical Society • July 2003

July Meeting

Speaker: Dr. Lee Homer

Chandra X-Ray Observatory
Uncovers the Compact Binary
Population of Globular Clusters

Wednesday, July 16
7:30 p.m.

Physics-Astronomy Building
Room A102
University of Washington
Seattle

Come early at 7 p.m. for coffee
and snacks and to visit with your
fellow members!

July Meeting Topic: Chandra X-Ray Observatory Revolutionizes Study of Globular Clusters

At our July Meeting, Dr. Lee Homer, a post-doctoral research associate at the UW's Department of Astronomy, will discuss the ways in which the Chandra X-ray Observatory is changing the way astronomers observe the universe. Says Dr. Homer, "The superlative ~1 arcsecond angular resolution of the Chandra X-ray Observatory is revolutionizing

the study of the exotic, but important, X-ray emitting population of globular clusters. Even with the Hubble Space Telescope the cores of many globular clusters are still extremely crowded. Now at X-ray wavelengths many compact binaries are revealing themselves, and will ultimately help us understand the dynamical and stellar evolution of globular clusters much better."

The Chandra X-ray Observatory, launched on July 23, 1999, has taken its place with the Hubble Space Telescope and Compton Gamma Ray Observatory in NASA's fleet of Great Observatories. As the world's premier X-ray observatory, Chandra gives astronomers a powerful new tool to investigate the hot regions of the universe where black holes, exploding stars, and colliding galaxies hold sway. Find out more at <http://chandra.nasa.gov>.

learn more about the Observatory on page 4

Seattle Astronomical Society

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From the President's Desk...

by Stephen Van Rompaey

At the June meeting I presented a new proposed program with the UW Campus Observatory. After the presentation and discussion, the members who were present unanimously approved this proposal. By the end of the meeting 14 members of the club had volunteered to learn how to operate the telescope at the observatory and assist with viewing nights. The board discussed how to organize the observatory team and in the short term, Mike Langley will take the lead. Once everyone is trained we plan to identify a team leader from our group of volunteers. This is intended to be a fun activity and each volunteer will have an opportunity to operate the telescope and participate in viewing nights.

If you and your spouse are interested in starting an SAS Youth Group, please contact Mary Ingersoll at chair@seattleastro.org.

Anyone who was not at the meeting is welcome to volunteer and should contact Mike Langley at education@seattleastro.org.

As we discussed at the June meeting, we can now use the campus observatory as a center for Youth Group activities. Several club members have expressed interest in being involved in this activity, but the board has a

specific model in mind for organizing the Youth Group. Based on previous experience within the SAS and at other astronomy clubs, the board feels that the Youth Group would be best led by a married couple with a child interested in participating in this type of activity. Initially, our plan is to go slowly in order to identify the best leaders for this group. If you and your spouse are interested in starting an SAS Youth Group, please contact Mary Ingersoll at chair@seattleastro.org.

At the June board meeting, the board appointed Rick Libsack as the club's new VP-Programs. The bylaws of the SAS call for the board to appoint an officer when a vacancy occurs during the middle of the year and the appointed officer serves in that position until the next election. We're grateful that Rick decided to volunteer for this position and we look forward to working with him this year. In addition, Kathy Watson volunteered as the club's Banquet Chair. Kathy has already gotten off to

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President's Message: continued from page 3

a great start and we look forward to hearing about the new settings she has in mind for next January's banquet.

For those of you who have not heard yet, the monthly star party in north Seattle is now being held again at Paramount Park. As a reminder, the club will have a booth at this year's TrailsFest being held at Rattlesnake Lake on Saturday, July 19th (the weekend before the Table Mountain Star Party). After the day's TrailsFest events, the plan is to hold a public star party at the lake. Some members have already volunteered to help at the booth and to provide telescopes for solar viewing. Please contact me at president@seattleastro.org if you would like to participate at the booth or at the star party that night.



Chandra X-Ray Observatory continued from page 1

Facts About the Chandra X-Ray Observatory

- ★ The Chandra X-ray Observatory is the world's most powerful X-ray telescope. It has eight times greater resolution and will be able to detect sources more than 20 times fainter than any previous X-ray telescope.
- ★ The Chandra X-ray Observatory's operating orbit takes it 200 times higher than the Hubble Space Telescope. During each orbit of the Earth, Chandra travels one-third of the way to the Moon.
- ★ The Chandra X-ray Observatory's resolving power is – 0.5 arc-seconds — equal to the ability to read the letters of a stop sign at a distance of 12 miles. Put another way, Chandra's resolving power is equivalent to the ability to read a 1-centimeter newspaper headline at the distance of a half-mile.
- ★ Although nothing can escape the incredible gravity of a black hole, not even light, the Chandra X-ray Observatory will be able to study particles up to the last millisecond before they are sucked inside.
- ★ It took almost four centuries to advance from Galileo's first telescope to NASA's Hubble Space Telescope — an increase in observing power of about a half-billion times. NASA's Chandra X-ray Observatory is about one-billion times more powerful than the first X-ray telescope, and we have made that leap in slightly more than three decades.

Calling all Amateur Astronomers!

by Marni Berendsen, Education Project Coordinator, ASP

Take this opportunity to complete the new online survey supported by Astronomical Society of the Pacific (ASP) and have a chance to win a \$100 gift certificate to the ASP Catalog!

You will be assisting in developing training and materials for amateur astronomers to help the public understand concepts of astronomy. In addition, the survey is collecting your experiences with any astronomy misconceptions you have come across in your encounters with the public. To access the survey go to <http://fs8.formsite.com/astrosociety/AstroSurvey/index.html>, or go through the ASP web site, at <http://www.astrosociety.org/>.

As an added bonus, if 15 or more of your club members respond to the survey, you will receive a copy of your club's responses (no names or other identifiers will be included). This could help in planning programs for your club and can serve as a topic of discussion at a club meeting. Just have your members put your club's full name on the form where they enter their name for the drawing.

We're expecting to close the survey by the end of August or September and will distribute club responses within six to eight weeks after that.

Thank you for your participation and your contribution to research in amateur astronomy outreach!

[By taking this survey] you will be assisting in developing training and materials for amateur astronomers to help the public understand concepts of astronomy.

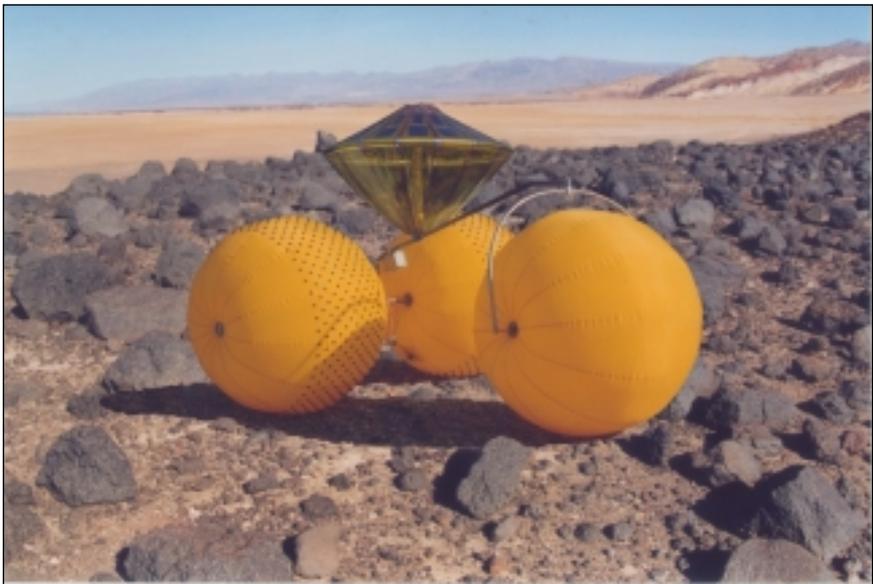
Monster Trucks on Mars

by Patrick L. Barry and Dr. Tony Phillips

We all know what Mars rovers look like now: Robotic platforms, bristling with scientific instruments, trundling along on small metallic wheels. Planetary rovers of the future, however, might look a little different — like miniature monster trucks!

Enormous, inflatable tires can easily roll right over the rocks and rugged terrain of alien planets, just as they bound over old cars like as many speed bumps.

That's the idea behind a novel concept for robotic planetary rovers known as the "big wheels inflatable rover." Unlike rovers similar to the Sojourner robot that explored the surface of Mars in 1997 that depend on instructions sent from Earth or complex programmed intelligence to steer through rough terrain, this rover has three beach ball-like tires roughly five feet across that make it a true off-road vehicle.



The "Big Wheels" inflatable rover doesn't mind a few boulder-sized rocks, no matter what planet they're on!

“We sent this rover out to Death Valley, to a place called Mars Hill that has a general geological formation like Mars, and nothing could stop it,” says Jack Jones, the mastermind of the inflatable rover concept at JPL. “It just kept going and going and going.”

Lots of current research is devoted to developing advanced robotic intelligence that allows rovers to detect rocks in their path and maneuver around them. The alternative to such on-the-spot intelligence is tedium: Ground controllers on Earth working out the maneuvers by hand and waiting an hour or more for the instructions to travel to the distant planet.

A “big wheels” rover would need such computer intelligence to avoid very large boulders, but Jones asks, “Why worry about every little rock, pebble, and crack when you can just roll right over most of them?”

“... this rover has three beach ball-like tires roughly five feet across that make it a true off-road vehicle.”

Jones imagines a scenario where multiple inflatable-wheel rovers could be sent out to explore the Martian terrain-easily and quickly traversing the rugged terrain. Samples gathered by the rovers could be returned to a central, stationary laboratory module for detailed analysis.

“The Martian surface is really very, very rough with a lot of rocks, and to be banging this laboratory equipment up and down over all of these rocks aboard the rovers doesn’t make much sense,” Jones says. “I suspect it might be better to leave it in a central location.”

At the moment it’s all very speculative; NASA currently has no definite plans to send inflatable rovers to Mars. But who knows, one day monster truck-like vehicles could be zipping over Mars’ rough, red surface.

Kids can baffle their friends with a robot puzzle (including a “Big Wheels” rover) they make themselves at http://spaceplace.nasa.gov/robots/robot_puzzle.htm. For adults, find out more about NASA’s inflatable rover program at http://www.jpl.nasa.gov/adv_tech/rovers/summary.htm.

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



July 2003

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2 UW Public Viewing Night 9 p.m.	3	4	5 Green Lake & Paramount Park Star Parties
6 	7	8	9	10	11	12 Amateur Telescope Makers SIG Meeting 6:30 p.m.
13 Astrophotography/Imaging SIG Meeting 2 p.m.	14	15	16 Monthly SAS Meeting UW Room A102 7:30 UW Public Viewing Night 9 p.m.	17	18	19 TrailsFest 2003 at Rattlesnake Lake, 9 a.m.
20 	21	22	23	24	25	26 Tiger Mountain Star Party 9:30 p.m.
Table Mountain Star Party • July 24-26						
27	28 SAS Board Meeting 7 p.m.	29	30	31		

TrailsFest: Venture out on I-90 to Rattlesnake Lake in North Bend for the Northwest's top outdoor expo. TrailsFest 2003 will feature exhibitors and presentations on paddle sports, climbing, mountaineering, adventure travel, mountain biking and outdoor photography, as well as hiking, backpacking, and astronomy.



August 2003

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2 Green Lake & Paramount Park Star Parties
3	4		5 UW Public Viewing Night 9 p.m.	6	7	8 9 Amateur Telescope Makers SIG Meeting 6:30 p.m.
10	11		12	13	14	15 16
17	18	19	20 Monthly SAS Meeting UW Room A102 7:30 UW Public Viewing Night 9 p.m.	21	22	23
24	25 SAS Board Meeting 7 p.m.	26	27 	28	29	30 Tiger Mountain Star Party 9:30 p.m.
31						

UW Sets Up Memorial Diversity Scholarship for Fallen Astronaut

by Paul Rudnick

The University of Washington mourns the loss of one of its family members — Michael Anderson, BS 1981 Physics/Astronomy — and has taken immediate steps to honor him and his life by creating the Lt. Col. Michael P. Anderson Memorial Diversity Scholarship at the University of Washington. This scholarship is designed to encourage under-represented minority students to enroll in the sciences and engineering at the University, thereby contributing to Lt. Col. Anderson's dream of creating a highly



educated, diverse pool of talented young people for the sciences generally and the nation's space program in particular.

The University aspires to create a permanent memorial for Lt. Col. Anderson by creating an endowed scholarship in his name and is actively seeking gifts to achieve this goal. Please make gifts out to the "University of Washington Foundation" and write on the memo line, "Anderson Endowment." You can send your gift to:

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50 Communications Building
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Seattle, WA 98195-3765

Founding Member of SAS Dies

W.J. "Bet" Abbott, founding member of the Seattle Astronomical Society, born April 1, 1920, died on June 7, 2003, at the age of 83. Dorothy, his loving wife and companion of 58 years, was at his bedside. Bet was born in Bellingham, Washington, and completed his primary education there before coming to Seattle to enter college in 1941. He enlisted in the U.S. Marines in June of 1942 and spent many months as a Line Corpsman with the Twenty-Second Marine Division during the intense fighting of the island-hopping battles in the South Pacific. He was awarded the Bronze Star for gallantry in action and two Purple Hearts. Nothing else in his life ever overshadowed those many months in action, and he kept in touch with his surviving comrades over the past sixty years. Bet and Dorothy were deeply involved with the square dancing community, and made many friends nationwide who shared this activity. Many of Bet's friends were unaware of his scholarly interest in a myriad of subjects. The included Hawaiian history, history of the Northwest, archeology, Native American petroglyphs, and the opera. He had also served as president of the Seattle Astronomical Society. He was a kind and gentle man who was always ready to help. His main cause was as a volunteer at Children's Hospital.



For Sale:

Meade 8" LX200 with \$2000 in accessories. Scope used only 5 times. \$1250 takes all. For further info contact Roger at: rpremo@wt.net

Do You Know Your Full Moons?

from *Farmer's Almanac* (<http://www.almanac.com>) and *Eric Weisstein's World of Astronomy* (<http://scienceworld.wolfram.com/astronomy/FullMoon.html>)

Sure, you've heard of the Harvest Moon. But are you familiar with Dying Grass Moon or Sap Moon? Historically, the Indians of what are now the northern and eastern United States kept track of the seasons by giving a distinctive name to each recurring full Moon, this name being applied to the entire month in which it occurred. With some variations, the same Moon names were used throughout the Algonquin tribes from New England to Lake Superior.

<i>Month</i>	Primary Name; Other Names Used
<i>January</i>	Wolf Moon; Old Moon, Cold Moon, Moon after Yule
<i>February</i>	Snow Moon; Hunger Moon, Bony Moon, Opening Buds Moon
<i>March</i>	Worm Moon; Crow Moon, Crust Moon, Sugar Moon, Sap Moon, Windy Moon, Lenten Moon
<i>April</i>	Pink Moon; Sprouting Grass Moon, Egg Moon, Fish Moon, Flower Moon, Frog Moon, Planter's Moon
<i>May</i>	Flower Moon; Corn Planting Moon, Milk Moon, Budding Moon
<i>June</i>	Strawberry Moon; Rose Moon, Hot Moon, Green Corn Moon, Flower Moon, Honey Moon
<i>July</i>	Buck Moon; Thunder Moon, Hay Moon, Ripe Corn Moon, Blood Moon
<i>August</i>	Sturgeon Moon; Red Moon, Green Corn Moon, Fruit Moon, Grain Moon
<i>September</i>	Harvest Moon*; Corn Moon, Barley Moon, Nut Moon, Fruit Moon
<i>October</i>	Hunter's Moon; Travel Moon, Dying Grass Moon, Moon of Falling Leaves
<i>November</i>	Beaver Moon; Frost Moon, Trading Moon, Hunter's Moon
<i>December</i>	Cold Moon; Long Nights Moon, Snow Moon, Moon Before Yule



* The Harvest Moon is always the full Moon closest to the autumnal equinox. If the Harvest Moon occurs in October, the September full Moon is usually called the Corn Moon.

Articles of Astronomical Interest

Recent articles of interest found online — to read the full articles, go to the web sites listed.

Round and Round We Go

by Bob Berman

full article at http://www.discover.com/July_03/gthere.html?article=featsky.html

Everything in the universe spins. From the tiniest electron to the grandest galaxy, nothing is whirl-proof. Rotation is so ubiquitous that we tend to take it for granted, but every spin tells a story. Study how an object turns and you learn about its size, its structure, even its life history.

The Galactic Odd Couple

by Kimberly Weaver

full article at <http://www.sciam.com/> July 2003 issue

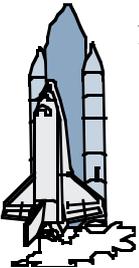
Why do giant black holes and stellar baby booms, two phenomena with little in common, so often go together?

It has come as a surprise over the past decade that black hole activity and star formation are closely intertwined. In many galaxies where black holes devour material greedily — generating a phenomenon that astronomers call an active galactic nucleus (AGN) — stars form at a precipitous rate in episodes known as starbursts. How can these two seemingly disconnected processes be so intimately related?

Long Shot

by Gregg Easterbrook

full article at <http://www.theatlantic.com/issues/2003/05/easterbrook.htm>



Defying the odds, even before the recent loss of the space shuttle Columbia, an eccentric company called Sea Launch has become the first private enterprise to send large rockets into space — from an enormous floating launch pad that sails to the equator for blast-off. Has the era of private space travel begun?

Sea Launch's core idea is a novel one; neither the National Aeronautics and Space Administration nor anybody else

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has tried the ocean approach to space. And it works: Sea Launch can send rockets into space more cheaply per payload pound than anything the government can offer, and those rockets place satellites exactly where they are supposed to go. Since its debut, in 1999, the Odyssey has launched seven large satellites, including the orbital broadcast towers for the new XM Satellite Radio subscription network—two multi-ton technomartels dubbed Rock and Roll.

Stunning Stardust

by Maia Weinstock

full article at http://www.discover.com/science_news/features/gthere.html?article=feat_stardust.html

or go to <http://www.discover.com/>, scroll down to Web Exclusive - Science News - Feature Stories, and click on Stunning Stardust

In March, astronomers working with the Hubble Space Telescope released a breathtaking series of images that illustrate a stellar process never before seen. In January 2002, an amateur discovered an eerie dust cloud surrounding the binary system V838 Monocerotis; several months later professional astronomers decided to focus Hubble's gigantic eye on the system at regular intervals. The astronomers now think the luminous cloud is a result of brief but powerful light flashes that emanate from one of two stars in the system.

Solar System “Twin” Found

by Dr. David Whitehouse

full article at <http://news.bbc.co.uk/2/hi/science/nature/3041220.stm>

Astronomers have found a planetary system similar to ours — a Jupiter-like world circling a Sun-like star in roughly the same orbit that Jupiter follows our Sun. Of the 100 or so other planetary systems known, this one more closely resembles ours than any other.

Researchers speculate that this system may contain other worlds, such as smaller rocky planets like Earth, either in orbit around the star or around the Jupiter-like world itself.

The planet's parent star, called HD 70642, is slightly too faint to be seen with the unaided eye, but is easily visible in the southern sky using binoculars.





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