

August 2006

Special points of interest:

- Take-Your Telescope-To-Work Day
- Meteors and Meteor Showers: The Science
- Rigel Passes Behind Saturn

August Meeting:

By popular request, the August 16 meeting of the Seattle Astronomical Society will be SAS Show and Tell. Everyone is invited to share their current projects and interests with the club members. Anyone who wants to give a short presentation is welcome. (Please stick to a 10 minute time limit.) People who feel a bit shy about standing in front of the room are welcome to share less formally with smaller groups during the break.

Suggested topics:

- A current telescope making project
- A new astro-gadget
- Slides or digital photos
- Report on a book you've read or lecture you've attended
- A new telescope
- Astronomy art
- Photos from Table Mountain
- Descriptions of recent observations or trips
- A perfect new observing site
- Report on astronomy outreach like public star parties or Project Astro
- Anything else astronomy related



Meeting Information

Wednesday, August 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!



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Seattle Astronomical Society

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From the President's Desk...

Take-Your-Telescope-To-Work Day

By Thomas Vaughan

Take-Your-Telescope-To-Work Day

In the past few weeks I've been able to participate in a number of SAS activities, such as TrailsFest and the UW astronomy outreach event. I've had some good times observing with SAS members and other local astronomers, and given non-astronomers a taste of what it's like to observe locally.

As a result of the various tasks involved in preparation and planning, I ended up with the club's PST (Personal Solar Telescope) at work. Rather than leave the scope locked up and unused in my car, I thought "why not set this up here at work?" It was a Friday afternoon, and I had an hour's gap between meetings, so I set it up on a patio at work and sent out a group email saying: "if you have 5 minutes, come by and look at the sun off the patio."

I figured a few people would wander by. Imagine my surprise when most of the floor turned out to take a look! I found several of my co-workers were closet astronomers, and even those who weren't were fascinated by the equipment, and the excellent view of the sun. We were lucky: although there were no sunspots, there was a large prominence in view at the bottom of the sun, delicate strands of plasma clearly visible through the hydrogen-alpha filter.

I ended up giving a number of people a link to the SAS website (I hadn't thought to bring any brochures!) and practically everyone left with a renewed commitment to look up more often.

So why not bring your telescope to work once in a while? Obviously, it depends on the workplace, and even the most accommodating of employers won't put up with someone spending a lot of time fiddling with their telescope. 😊 But I'm sure that if you wanted to give co-workers a look at the sun, or moon, or planets, it would be a welcome addition to the workplace once every few months.

It's a great way to remind people about the joys of astronomy, and the importance of dark skies. And you can tell them about the SAS!

Table Mountain

It sounds like Table Mountain was a good time this year--I look forward to hearing stories from SAS members who went. Also tell Bruce Kelley, our VP of Programs. He is interested in members' photos of the event. Did you get any good astrophotos while there? Again, let Bruce know, so we can share those at upcoming meetings.

And a big "Thank You" to all who helped represent the SAS at Table Mountain. We had a table set up, with glow-in-the-dark necklaces for kids, and coffee and brochures for their parents. It was a great way to remind local astronomers of the SAS, and I appreciate the work that the SAS delegation put into it.

Dark Sky Site Update

Dark Sky Site membership is now in the mid-30's! With a solid amount of capital and commitments we are actively looking for sites and need your help. Do you know of any land for sale in Eastern Washington that meets our criteria? Do you have time to participate in site surveys? If so, definitely contact myself or any dark sky site board member. We would like to find a site soon.

Our criteria:

- Dark sky (of course!)
- Around 20 acres
- Southern sky exposure
- Maximum 3 hours drive from Seattle
- Minimum of 8-9 months accessibility
- 2-4,000 feet altitude
- Accessible without 4 wheel drive
- Flat areas for pads/parking
- Not too windy

Happy Observing-

-Thomas

SAS July 2006 Club Meeting Minutes



Announcements:

The annual Table Mountain Star Party will be held in the coming weekend and the weather promises to be good. SAS will have a table in vendor row during part of the event and members are encouraged to stop by.

Trailsfest is also this weekend at Rattlesnake Lake. Thomas Vaughan will be there manning a table and promoting SAS. Anyone wishing to is welcome to stop by and participate.

The Dark Sky Site initiative now has 31 members and about \$19,000 in the coffers from memberships and donations. A search for a site has begun.

Meeting Topic:

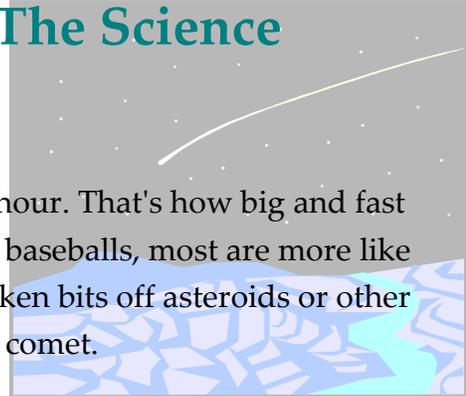
Dr. Paul Hodge of the University of Washington gave an informative and lively talk on "The Evolution of Galaxies".

Meeting was adjourned around 9:00PM.

Meteors and Meteor Showers: The Science

[By Robert Roy Britt]

Imagine a baseball zipping along at 30,000 miles per hour. That's how big and fast many meteors are. And though some are bigger than baseballs, most are more like grains of sand. The larger meteors are sometimes broken bits off asteroids or other planets. The small stuff is often dust left by a passing comet.



Entry into the atmosphere

When they plow through the atmosphere, meteors are heated to more than 3000 degrees Fahrenheit, and they glow. Meteors are not heated by friction, as is commonly thought. A phenomenon called ram pressure is at work. A meteor compresses air in front of it. The air heats up, in turn heating the meteor.

The intense heat vaporizes most meteors, creating what we call shooting stars. (Most become visible at around 60 miles up.) Some large meteors splatter, causing a brighter flash called a *fireball*, and an explosion, which can often be heard up to 30 miles away. When meteors hit the ground, they're called *meteorites*. Some meteors are bits broken off asteroids, others -- mere cosmic dust -- are cast off by comets. (And one more term: A *meteoroid* is an object in space that may, if it enters our atmosphere, become a meteor.)

Meteor breakup

Whether an object breaks apart depends on its composition, speed and angle of entry. A faster meteor at an oblique angle suffers greater stress. Meteors composed of iron withstand the stress better than those made of stone. Even an iron meteor will usually break up as the atmosphere becomes denser -- around 5 to 7 miles up.

A meteor sometimes explodes above the surface, causing widespread damage from the blast and ensuing fire. This happened in 1908 over Siberia.

Impact with Earth

Extraterrestrial objects that hit the ground, their speed roughly half what it was upon

entry, blast out craters 12 to 20 times their size. Craters on Earth form much as they would on the moon or any rocky planet. Smaller objects create simple, bowl-shaped craters. Larger impacts cause a rebound that creates a central peak; slipping along the rim forms terraces. The largest impacts form basins in which multiple rebounds form several inner peaks.

Typical composition

Iron meteorite	Stony meteorite	Earth's crust
Iron 91%	Oxygen 36%	Oxygen 49%
Nickel 8.5%	Iron 26%	Silicon 26%
Cobalt 0.6%	Silicon 18%	Aluminum 7.5%
Source:	Magnesium 14%	Iron 4.7%
Encyclopaedia	Aluminum 1.5%	Calcium 3.4%
Britannica	Nickel 1.4%	Sodium 2.6%
	Calcium 1.3%	Potassium 2.4%
		Magnesium 1.9%

History

In ancient times, objects in the night sky conjured superstition and were associated with gods and religion. But misunderstandings about meteors lasted longer than they did about most other celestial objects.

Meteorites (the pieces that make it to Earth) were long ago thought to be cast down as gifts from angels. Others thought the gods were displaying their anger. As late as the 17th century, many believed they fell from thunderstorms (they were nicknamed "thunderstones"). Many scientists were skeptical that stones could fall from the clouds or the heavens, and often they simply didn't believe the accounts of people who claimed to have seen such things.

Read more at: <http://www.space.com/scienceastronomy/solarsystem/meteors-ez.html>



August 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	 2 UW Campus Observatory public viewing night	3	4	5
6	7	8	 9	10	11 East Coast Conference on Astronomical Imaging (ECCAI)	12 Amateur Telescope Makers SIG Meeting
13	14	15	 16 SAS Meeting UW Campus Observatory public viewing night	17	18	19
20	21 SAS Board Meeting	22	 23	24 Oregon Star Party	25 Oregon Star Party	26 Oregon Star Party Tiger Mountain/Poo Poo Point Star Party
27 Oregon Star Party	28	29	30	 31		



September 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6 UW Campus Observatory public viewing night	7 	8	9 Amateur Telescope Makers SIG Meeting
10 Astrophot- ography/ Im- aging SIG Meeting	11	12	13	14 	15	16
17	18	19	20 SAS Meeting UW Campus Observatory public viewing night	21 AstroFest	22  AstroFest	23 Tiger Moun- tain/Poo Poo Point Star Party
24	25 SAS Board Meeting	26	27 Oregon Star Party	28	29	30  Paramount Park Star Party

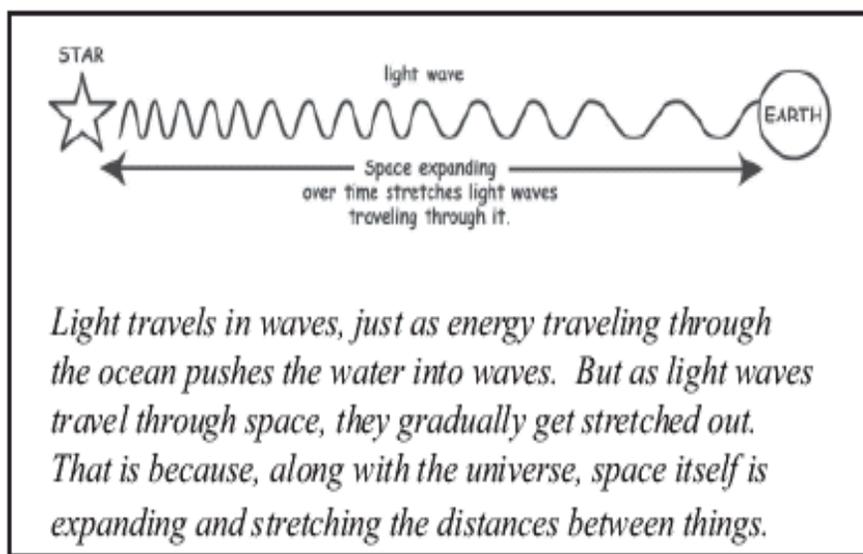
Clues from Ancient Light



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 numbers). 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).

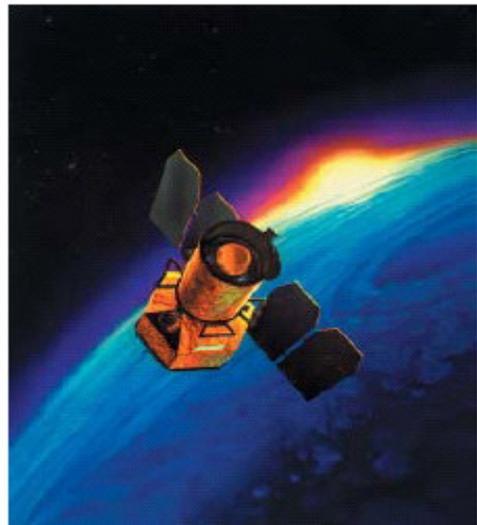


GALEX Looks Back in Time

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*.

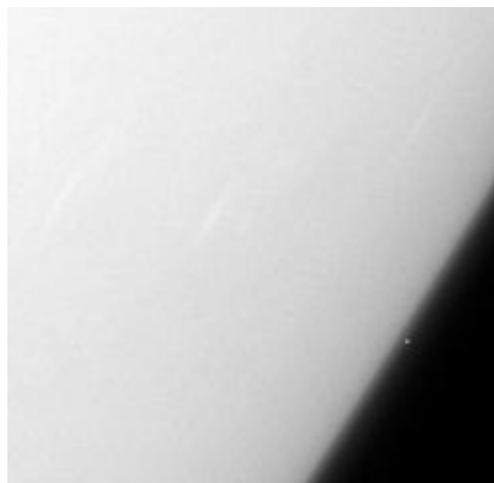


This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Space Bits

Rigel Passes Behind Saturn

NASA's Cassini spacecraft captured this image of the star Rigel passing behind Saturn's atmosphere. Rigel is well known to astronomers, as one of the brightest stars in the constellation of Orion. This event allows Cassini to measure the haze structure and opacity of Saturn's upper atmosphere as the star is dimmed. Cassini took this image on June 30, 2004 when it was 446,000 kilometers (277,000 miles) from Saturn.



Rigel behind Saturn. Image credit: NASA/JPL/SSI

Link: <http://www.universetoday.com/2006/08/08/rigel-passes-behind-saturn/>

James Van Allen Dies

Renowned space scientist Dr. James A. Van Allen died in the morning of August 9th at the age of 91. Although he had a lifetime's worth of contributions to astronomy, space science and space exploration, Dr. Allen was best known for his discovery of the radiation belts that surround the Earth. An experiment he designed for the spacecraft Explorer 1 gauged the Van Allen belts using tiny Geiger counters to measure radiation. He retired from full time teaching at the University of Iowa in 1985, but continued to write, oversee research, and monitor data sent back by spacecraft he was involved with.



James Van Allen. Image credit: U of Iowa

Link: <http://www.universetoday.com/2006/08/09/james-van-allen-dies/>

Satellites Measure Melting Greenland Ice

NASA's GRACE satellites have measured an increasing rate of ice melt in Greenland. According to new analysis by researchers at the University of Arizona at Austin, the loss of ice from Greenland's southeastern region has sped up between 2002 and 2005. Approximately 239 cubic kilometers (57 cubic miles) is now lost each year. Greenland contains 10% of the Earth's fresh water, and this melting ice is contributing 0.56 mm (.02 inches) to globally rising sea levels.

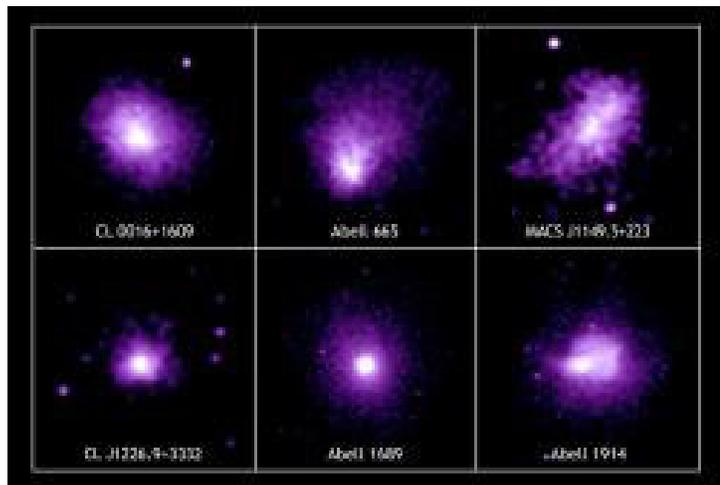


*Southern tip of Greenland.
Image credit: NASA*

Link: <http://www.universetoday.com/2006/08/10/satellites-measure-melting-greenland-ice/>

Chandra Confirms the Hubble Constant

Nearly every single astronomical measurement depends on the Hubble constant, a number that calculates the expansion of the Universe. NASA's Chandra X-Ray Observatory recently measured this value independently, and came up with a similar number - 77 km per second per megaparsec (3.26 million light-years to the megaparsec). Give or take 15%. This confirms that the Universe is still between 12 and 14 billion years old.

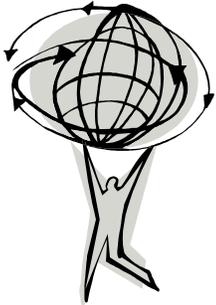


Galaxy clusters. Image credit: Chandra

Link: <http://www.universetoday.com/2006/08/08/chandra-confirms-the-hubble-constant/>

We promise you the sun, moon and stars and we deliver...

The Seattle Astronomical Society is an organization created and sustained by people who share a common interest in the observational, educational, and social aspects of amateur astronomy. Established in 1948, the SAS is a diverse collection of over 200 individuals. A variety of programs and activities is presented by the SAS throughout the year. Monthly meetings feature speakers on a wide range of topics, from the Hubble Space Telescope to electronic imaging to personal observing experiences. The club holds public observing "star parties" at Green Lake every month, dark sky observing parties outside Seattle, plus such activities as meteor watches, public telescope and astronomy displays, National Astronomy Day, and an annual Awards Banquet.



We're on the Web!
www.seattleastro.org



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