



**Enceladus from Cassini**

**Longmont Astronomy Society Newsletter  
September 2008**

### **From the President:**

The LAS Execs met 9/25/08 to consider whether LAS should apply for a special use permit for a dark sky site at Crow Valley. It was agreed that we should do so.

It was agreed to specify on the permit an area for setting up scopes. Each scope will have about an 8x8 ft graded area surrounded by timbers and filled with pea gravel. This would be similar to the areas at state of Colo. Sterling Reservoir campground for setting up tents. LAS will construct 6 to 8 such scope sites this spring.

We considered building an observatory but decided not to do so. The special use permit requires that we specify when construction would begin and be completed. It also requires that we prove financial ability to construct and remove the facility. Although we might be able to raise additional funds to build an observatory in a few years, we do not have sufficient cash on hand now. We will not specify an area on the permit for an observatory at this time.

We also considered whether or not to amend the club's bylaws to provide for governance by a board of directors rather than an executive committee. Most donor organizations require that the applicant have an executive board. Since we do not foresee any need to apply for grants, there is no need to make changes to the club bylaws.

Next steps:

- Locate possible observing sites near the Crow Valley campground (this Sat. afternoon, weather permitting)
- Prepare special use permit and supporting documents (by Oct 3)
- Prepare presentation and meet with FS Dist. Office (mid Oct?)
- Permit will be modified to include possible changes requested by FS
- Submit special use permit (Oct 31?)

### **In the sky this month:**

Meteor Showers

Orionids October 21, morning Moon rises around 1 A.M. (last quarter)

Planets:

Mercury: very low at sunrise

Venus: very low at sunset, lost in the mountains to the west

Mars: lost in the sunset

Jupiter: still a very bright object in the south at sunset. Surprisingly enough, I was able to get the moons at Gary's with my 10x50 binoculars and averted vision.

Saturn: now visible very low in the dawn sky

Interesting Stars/Galaxies

### **Club Calendar:**

Sat, Sept 27 – club star party at RAC (directions on the club website).

Thurs, Oct 16 – club meeting at FRCC community room, 7:00-9:00

October 5 – for \$10, you can tour 14 solar homes in Boulder County. Use that astronomy object(the Sun) for something other than a scope target! Details at [www.ecoartsonline.org](http://www.ecoartsonline.org)

### **Fiske Planetarium:**

7:30pm Tuesday, Sept. 23 -- "Charlas de las Estrellas: Astronomia de Nuestros Antepasados": live SPANISH star talk with Tito Salas. Explore the skies of our ancestors during CU Arts & Culture Week (Sept. 19-26).

7:30pm Thursday, Sept. 25 -- UNDER ONE SKY: Collaborative prints by Melanie Yazzie and Aboriginal, Maori, and Norfolk Island Indigenous Artists (curated by Lisa Tamiris Becker, Director, CU Art Museum). FREE admission to reception (6:30pm) & gallery talk (7:30pm) in Fiske's lobby! Part of CU Arts & Culture Week.

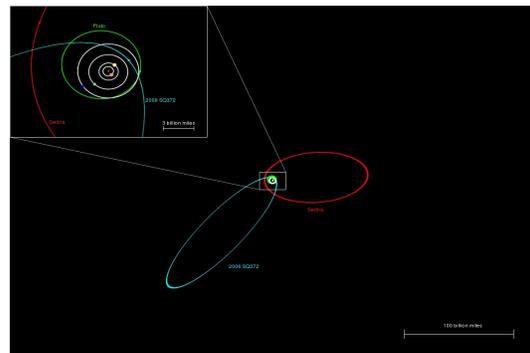
7:30pm Friday, Sept.26 -- "Aboriginal Skies": live star talk with Yidumduma Bill Harney, Paul Taylor and Dr. John Stocke. Discover the skies of the Wardaman people of northern Australia through the voice and music of this remarkable native elder. Concludes CU's Arts & Culture Week.

Ask for an "Adult Free" coupon at Fiske's ticket window! Anyone under age 18 with paid admission qualifies to bring an adult to Fiske at no cost! You are welcome to photocopy and use these coupons until December 31, 2008.

### **Internet Resources:**

A "minor planet" with the prosaic name 2006 SQ372 is just over 2 billion miles from Earth, a bit closer than the planet Neptune. But this lump of ice and rock is beginning the return leg of a 22,500-year journey that will take it to a distance of 150 billion miles, nearly 1,600 times the distance from the Earth to the Sun, according to a team of researchers from the Sloan Digital Sky Survey (SDSS-II).

The discovery of this remarkable object was reported August 18 in Chicago, at an international symposium titled "The Sloan Digital Sky Survey: Asteroids to Cosmology." A paper describing the discovery technique and the properties of 2006 SQ372 is being prepared for submission to the *Astrophysical Journal*.

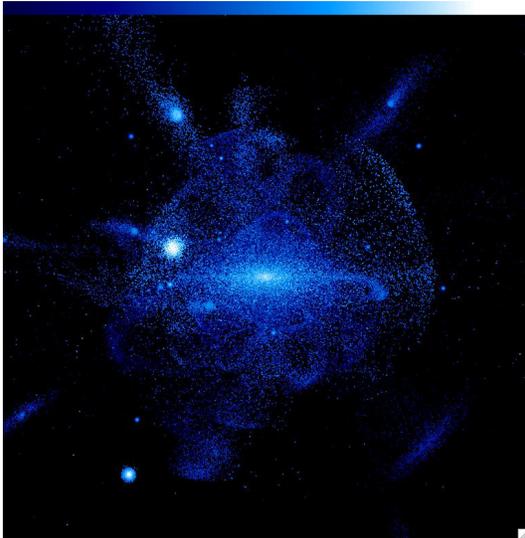


Sloan Survey 2: (picture – Milky Way halo)

The halo of stars that envelops the Milky Way is like a river delta crisscrossed by stellar streams large and small, according to new data from the Sloan Digital Sky Survey (SDSS-II). While the largest rivers of this delta have been mapped out over the last decade, analysis of the new SDSS-II map shows

that smaller streams can be found throughout the stellar halo, says Kevin Schlaufman, a graduate student at the University of California at Santa Cruz.

Schlaufman reported his results Saturday at an international symposium in Chicago, titled "The Sloan Digital Sky Survey: Asteroids to Cosmology." Over the last 3 years, Schlaufmann explains, the SEGUE survey of SDSS-II has measured the motions of nearly a quarter million stars in selected areas of the sky. A careful search for groups of stars at the same velocity turned up 14 distinct structures, 11 of them previously unknown.



Since these two articles reference the

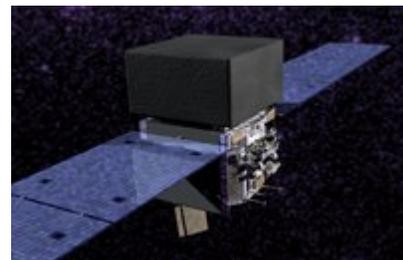
Sloan Digital Sky Survey, perhaps a link to the SDSS website

<http://www.sdss.org/> would be a good idea. The Sloan camera is a 120 megapixel one, using an array of CCD chips. For most pictures, they overlay this with a template, using optical fibers to conduct the light from a given object to a spectrograph. The final object is to image and determine the redshift to about 1/4 of the sky. Part of the work was done at the University of Michigan, and the editor was at a presentation explaining all this, then one of my students worked on the SDSS to help pay her way through the UofMich – now she's a PhD student in Ohio.

NASA's newest space telescope, formerly known as GLAST, has passed its orbital checkout with flying colors, kicking off a mission to explore the violent and unpredictable gamma ray universe.

It's getting started with a new name: NASA announced today that GLAST has been renamed the Fermi Gamma-ray Space Telescope in honor of Prof. Enrico Fermi (1901 - 1954), a pioneer in high-energy physics.

<http://science.nasa.gov/headlines/y2008/images/firstlight/allsky.jpg> will get you a Fermi picture of the entire sky



– good chance to check out the pulsars. Now if we could only see in gamma rays....

Obscure fun:

Try to observe a meteor hitting the Moon – see the picture of one at [http://science.nasa.gov/headlines/y2008/02sep\\_lunarperseids.htm?list937934](http://science.nasa.gov/headlines/y2008/02sep_lunarperseids.htm?list937934) It's a lot easier during the Perseids, isn't it?

Astronomy magazine has changed its podcast format to “things to see this week” (probably copied it from Vern). Go to [www.astronomy.com](http://www.astronomy.com), click on multimedia and select ‘podcast’. If you're digitally hip, download the podcast, put it on your IPOD, then listen to it while observing. You can also easily access the past ones (since the stars don't move a lot during a couple of months, the information is still valid)

Sky and Telescope also has podcasts.

The Mars rover Opportunity has successfully exited Victoria crater, and is off to visit a nearby crater, “Endeavour”. The journey of 7 miles will take approximately two years at 330 ft/day maximum speed (I know, that doesn't add up, does it? I got the numbers from NASA) “Endeavour” is much bigger and deeper, so Opportunity will be able to examine many more rock layers.

### **Upcoming Space Missions:**

**Cover Story;** Check out the remodeled Cassini website at <http://Saturn.jpl.nasa.gov> for the new stuff – click on Saturn moons on the main page, then Enceladus for a 3-D tour of the moon. Cassini will have a very close flyby on Oct 9<sup>th</sup>, then wait for the batch of new pictures to arrive.

Shuttle mission STS-125 is on target to service the Hubble Telescope for the final time on October 10 (note: Hurricane Ike cut the training program, so the launch has been delayed until October 14). The astronauts have been training about 2 years, so they are probably dreaming things like “after giving bolt 2B-1 two turns to the left, place the orange nut on the protruding bolt”. Atlantis is on the launch pad and Endeavour is waiting in the wings as the emergency vehicle. Following the mission, Endeavour will be returned to the assembly building and outfitted as STS-126 to visit the International Space Station.

The Atlantis crew will make a series of spacewalks to install that Colorado spectrograph, replace the camera (the camera has been broken for a year or so, but NASA keeps releasing images to pretend it's ok...), and the usual new gyroscopes and batteries to keep the Hubble aimed in the right direction. After the visit, Hubble should be good for another 5 years or so. They also will attach a docking device so Hubble can be safely deorbited by a visited unmanned rocket. More details at <http://nasa.gov>

Spectrograph details:

Astronomers will use a \$70 million instrument designed by the University of Colorado at Boulder now set for installation on the Hubble Space Telescope in mid-October to probe

the "fossil record" of gases in the early universe for clues to the formation and evolution of galaxies, stars and planets.

The telephone-booth-sized instrument known as the Cosmic Origins Spectrograph, or COS, should help scientists better understand the "cosmic web" of material believed to permeate the universe, said CU-Boulder Professor James Green, COS science team leader. COS will gather information from ultraviolet light emanating from distant objects, allowing scientists to look back in time and space and reconstruct the physical condition and evolution of the early universe, said Green.

"Light traveling from quasars billions of light-years away is altered as it passes through the material between galaxies, allowing us to see fingerprints of different gases," said Green of CU-Boulder's Center for Astrophysics and Space Astronomy. "By choosing hundreds of targets in many directions, we can build up a picture of the way matter is organized in the universe on the grandest of scales."

While matter is thought to have been distributed uniformly throughout space just after the Big Bang, gravity has collapsed the universe into its present structures, said Green. "The Cosmic Origins Spectrograph is 10 times more sensitive than any instrument of its kind, which opens up a whole new vista of scientific opportunities for Hubble," he said.

"That's why we are so excited to get it into orbit."

The spectrograph will break light into its individual components – similar to the way raindrops break sunlight into the colors of the rainbow -- revealing information about the temperature, density, velocity, distance and chemical composition of galaxies, stars and gas clouds. COS will be able to peer back in time to 10 billion years ago when the first galaxies and chemical elements were forming, Green said.

Also in the "upcoming" – Messenger will make its second flyby of Mercury in October, so look for those pictures to be available near the end of the month.