

# Smoky Mountain Astronomical Society

S. C. R. A. P. S.

## Society's ChRonological Astronomical PaperS

Here it is night...I stand before the summit temple;  
The stars are almost within reach of my hand...  
In the awesome silence I speak no word  
That I disturb not the dwellers of heaven.  
T'ang Dynasty poet Li Po

### From the President - Lee Erickson

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February brings SMAS Elections and our first Public Outreach Star Party ever in Townsend. Elections will be during our February 8<sup>th</sup> meeting. Then, the very next day we have an opportunity to first tell and then show some of our neighbors about amateur astronomy and the beauties of the night sky.

Informally our meeting will begin at 7:00 PM in room 223 Alexander at the Pellessippi Technical Community College at Harden Valley. Chat with friends and visitors. If you have library books checked out you can return them and look for new books. This will also be a good time to pay the annual SMAS dues to our Treasurer, Scott Byers. Dues remain at \$20.00. A check is preferred so that we do not have to handle cash. And remember, you must be a paid member to vote in the elections and families cast one vote.

Then at 7:30 PM, we begin the more formally meeting. After some announcements, we will have our guest presentation by Steve Magocs. Steve is a former optical engineer for Philips Consumer Electronics. There he was involved with the designed of 30KEV Particle Beam Display Systems where he was responsible for the optical projection systems with liquid coupled and liquid cooled F=1 lens systems. I have asked Steve to speak to us about Chromatic Aberration.

### Agenda for the meeting February 8

After our guest presentation a Treasurers Report by Scott Byers.  
Then it is Elections time.

Secretary, Dennis Hutchesen will conduct the election.

Open Nominations

Form election balloting committee

Balloting

Thank New officers!

Gastronomy at Chili's near Kingston Pike and I140.

## Public Outreach at Winter Heritage Festival, Townsend, TN

Fellow SMAS members,

I would like to ask persons interested in participating in the February 9th Star Party / Public Outreach to give me a firm or tentative RSVP as I may am be getting free or reduced meals. (If we get some discount meals I would like to offer them first to spouses who attend and then by members in order of distance driven.) More details below.

Lee Erickson  
Phone 977-1242 or [leerickson@earthlink.net](mailto:leerickson@earthlink.net)

Location:  
The Barn Event Center of the Smokies  
7264 E. Lamar Alexander Parkway, Townsend, Tennessee 37882  
865-448-3812

Schedule of events;  
Set up: Drop off telescopes in upper parking lot. Park cars across the street and walk or shuttle back. ( Do we need to keep one at least one car parked near buy if we need to ferry people or equipment?)  
We can get electricity, I suggest we bring long extension cords. I have one 100 FT.

Saturday, February 9, evening at The Barn Event Center of the Smokies:

- \* 5:00-6:00 Mike Clemmer, dulcimer music
- \* 5:30 set up telescopes
- \* 6:00-7:00 Star-gazing with the Smoky Mountain Astronomical Society-  
Description of Telescope and Amateur astronomy.
- \* 7:00-8:00 Catered supper by Miss Lily's (Mixed eating and viewing of Mars, Saturn, Orion.) Star Gazing break for...
- \* 8:00-9:00 Bo Taylor, Native American Culture program
- \* 9:00- Return to star gazing. See darker objects.

The cost for the evening is \$20 for the meal and entertainment, however the event organizer, Jeanie, will try to get us some free meal tickets (five?) but would like to know how many. I want to offer them to spouses and to the people who drive the furthest.



Hello,

Are you looking at our website,

[www.smokymtnastro.org](http://www.smokymtnastro.org/) ?

Maybe you surfed into it. Accidentally. Or intentionally. You can read this newsletter there, anytime, you know.

But you can't read our private yahoo group. That's cause it's private. Right. We've got a private yahoo group. It goes with joining SMAS.

You join SMAS, you get in our private yahoo group. It's neat. Here's an excerpt from a recent conversation.

Ok, here is my modest attempt to clarify the concept...

Most people have the following concept of Big Bang (BB) theory:

- a) The Universe started at a point.
- b) It exploded and flung stuff out into space in all directions uniformly.
- c) The stuff flying outward from this source point can't move faster than the speed of light.

Then, according to this mental model, if we were at a very outlying edge of the Universe, then the maximum distance to the other side that is 180 degrees opposite would be about twice the age of the Universe.

Unfortunately, the above mental model could not be more wrong. It has absolutely nothing to do with BB theory. In order to understand, you have to throw away that mental picture.

... there's more, of course, but this'll do for now.

Well, you get the idea. Guys and gals talking about astronomy stuff.

If you're interested, we meet once a month at Pellissippi State main campus. We have two star parties a month in season.

We have a lotta fun.. You might like to join us.

You can find out details elsewhere on this website.

Check us out.

## Early Bird Gets the Worm or “Black Hole Breakfast”

by Dr. Tony Phillips

We all know that birds eat worms. Every day, millions of birds eat millions of worms. It's going on all around you! But how often have you awakened in the morning, stalked out in the dewy grass, and actually seen a bird having breakfast? Even though we know it happens all the time, a bird gulping a worm is a rare sight.

Just like a black hole gulping a star...

Every day in the Universe, millions of stars fall into millions of black holes. And that's bad news for the stars. Black holes exert terrible tides, and stars that come too close are literally ripped apart as they fall into the gullet of the monster. A long burp of X-rays and ultraviolet radiation signals the meal for all to see.

Yet astronomers rarely catch a black hole in the act. “It's like the problem of the bird and the worm,” says astronomer Christopher Martin of Caltech. “You have to be in the right place at the right time, looking in the right direction *and* paying attention.”

A great place to look is deep in the cores of galaxies. Most galaxies have massive black holes sitting in their pinwheel centers, with dense swarms of stars all around. An occasional meal is inevitable.

A group of astronomers led by Suvi Gezari of Caltech recently surveyed more than 10,000 galactic cores—and they caught one! In a distant, unnamed elliptical galaxy, a star fell into a central black hole and “burped” a blast of ultraviolet radiation.

“We detected the blast using the Galaxy Evolution Explorer (GALEX), an ultraviolet space telescope,” explains Gezari. Her team reported the observation in the December 2006 issue of *The Astrophysical Journal Letters*. “Other telescopes have seen black holes devouring stars before,” she adds, “but this is the first time we have been able to watch the process from beginning to end.”

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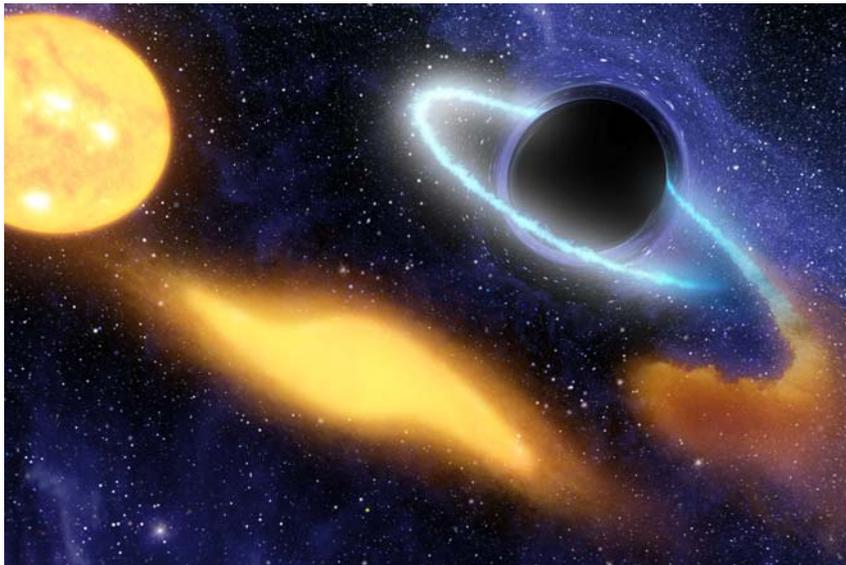
The meal began about two years ago. After the initial blast, radiation diminished as the black hole slowly consumed the star. GALEX has monitored the process throughout. Additional data from the Chandra X-ray Observatory, the Canada-France-Hawaii Telescope and the Keck Telescope in Hawaii helped Gezari's team chronicle the event in multiple wavelengths

Studying the process in its entirety "helps us understand how black holes feed and grow in their host galaxies," notes Martin.

One down, millions to go.

"Now that we know we can observe these events with ultraviolet light," says Gezari, "we've got a new tool for finding more."

For more on this and other findings of GALEX, see [www.galex.caltech.edu](http://www.galex.caltech.edu). For help explaining black holes to kids, visit The Space Place at [spaceplace.nasa.gov](http://spaceplace.nasa.gov).



*In this artist's concept, a giant black hole is caught devouring a star that ventured too close.*

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

## Even Solar Sails Need a Mast

by Patrick L. Barry

Like the explorers of centuries past who set sail for new lands, humans may someday sail across deep space to visit other stars. Only it won't be wind pushing their sails, but the slight pressure of sunlight.

Solar sails, as they're called, hold great promise for providing propulsion in space without the need for heavy propellant. But building a solar sail will be hard; to make the most of sunlight's tiny push, the sail must be as large as several football fields, yet weigh next to nothing. Creating a super-lightweight material for the sail itself is tricky enough, but how do you build a "mast" for that sail that's equally light and strong?

Enter SAILMAST, a program to build and test-fly a mast light enough for future solar sails. With support from NASA's In-Space Propulsion Program to mature the technology and perform ground demonstrator tests, SAILMAST's engineers were ready to produce a truss suitable for validation in space that's 40 meters (about 130 feet) long, yet weighs only 1.4 kilograms (about 3 pounds)!

In spite of its light weight, this truss is surprisingly rigid. "It's a revelation when people come in and actually play with one of the demo versions—it's like, whoa, this is really strong!" says Michael McEachen, principal investigator for SAILMAST at ATK Space Systems in Goleta, California.

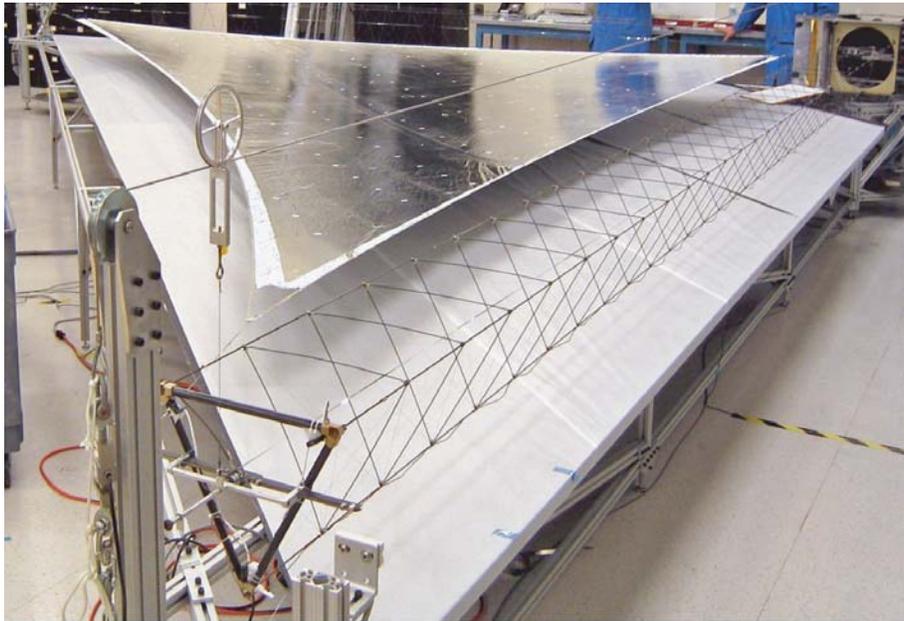
SAILMAST will fly aboard NASA's Space Technology 8 (ST8) mission, scheduled to launch in February 2009. The mission is part of NASA's New Millennium Program, which flight tests cutting-edge technologies so that they can be used reliably for future space exploration. While actually flying to nearby stars is probably decades away, solar sails may come in handy close to home. Engineers are eyeing this technology for "solar sentinels," spacecraft that orbit the Sun to provide early warning of solar flares.

Once in space, ST8 will slowly deploy SAILMAST by uncoiling it. The truss consists of three very thin, 40-meter-long rods connected by short cross-members. The engineers used high-strength graphite for these structural members so that they could make them very thin and light.

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The key question is how straight SAILMAST will be after it deploys in space. The smaller the curve of the mast the more load it can support. “That's really why we need to fly it in space, to see how straight it is when it's floating weightlessly,” McEachen says.

It's an important step toward building a sail for the space-mariners of the future.



*SAILMAST is the thin triangular truss in front of the picture. It is attached to a section of a silver foil solar sail section shown here in a laboratory test. The mast in the picture is 2m (6 ft) long. The Space Technology 8 mission will test the SAILMAST, which is 20 times longer.*

Find out more about SAILMAST at [nmp.nasa.gov/st8](http://nmp.nasa.gov/st8). Kids can visit [spaceplace.nasa.gov/en/kids/st8/sailmast](http://spaceplace.nasa.gov/en/kids/st8/sailmast) to see how SAILMAST is like a Slinky® toy in space.

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



# February 2008

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
SCRAPS depends Upon its friends	Help! Help!				UTK	TAO
3	4	5	6 New Moon	7	8 SMAS Meeting PSTCC 7 pm	9 Public Outreach Townsend
10	11	12	13	14	15	16
					UTK	TAO
17	18	19	20	21	22	23
24	25	26	27	28	UTK—roof of Neilson Physics Building on The Hill at UT 1st & 3rd Fridays TAO —Tamke-Allan Observatory Public Stargaze Watts Bar Lake, Roane County 1st & 3rd Saturdays	