CONSTELLATION

Fall 2008, No. 3

"The world of learning is so broad, and the human soul is so limited in power! We reach forth and strain every nerve, but we seize only a bit of the curtain that hides the infinite from us."

~Maria Mitchell

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Death of a Supergiant

By all outward appearances, the red supergiant appeared normal. But below the surface, hidden from probing eyes, its core had already collapsed into an ultra-dense neutron star, sending a shock wave racing outward from the star's center at around 50 million kilometers per hour.

The shock wave superheated the plasma in its path to almost a million degrees Kelvin, causing the star to emit high-energy ultraviolet (UV) radiation. About six hours later, the shock wave reached the star's surface, causing it to explode in a Type IIP supernova named SNLS-04D2dc.

Long before the explosion's visible light was detected by telescopes on Earth, NASA's Galaxy Evolution Explorer (GALEX) space telescope captured the earlier pulse of UV light — scientists' first glimpse of a star entering its death throes.

"This UV light has traveled through the star at the moment of its death but before it was blown apart," explains Kevin Schawinski, the University of Oxford astrophysicist who led the observation. "So this light encodes some information about the state of the star the moment it died."

And that's exactly why astronomers are so excited. Observing the beautiful nebula left behind by a supernova doesn't reveal much about what the star was like before it exploded; most of the evidence has been obliterated. Information encoded in these UV "pre-flashes" could offer scientists an unprecedented window into the innards of

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CONTACT!

MAPS Executive Committee

Officers (2007-2009)

President
Gloria Villalobos
Novins Planetarium
Toms River, NJ
gvillalobos@ocean.edu
732-255-0400 X 2111

President-Elect
Steve Mitch
Benedum Planetarium
Wheeling, WV
smitch@oglebay.com
304 243-4034

Past President
Patty Seaton
H. B. Owens Science Center
Prince George's County, MD
pxts13@yahoo.com
301-918-8750

Secretary
Sam Storch
Edwin P. Hubble Planetarium
Brooklyn, NY
liskies@aol.com
718 258-9283 X 492

Treasurer
Keith Johnson
Edelman Planetarium
Glassboro, NJ
johnsonk@rowan.edu
856-256-4389

Board Members (2008-2010)
Lee Ann Hennig
Thomas Jefferson High School
Alexandria, VA
lahennig@earthlink.net
703-750-8380

Steve Russo
Suits-Bueche Planetarium
Schenectady, NY
russo@schenectadymuseum.org
518-382-7890 ext.253

Ted Williams
Mallon Planetarium
Norristown, PA
twilliams@methacton.org
610-489-5000 X30208

A Note from the President

The Fall weather is finally starting to arrive and for most of us, that brings with it a new round of eager students coming through our theater doors. I've had a chance to see many of you this summer at various conferences, and have even had the opportunity to visit a few of your facilities. Whether visiting big facilities, small ones or portable ones, I never cease to be amazed by the creativity and enthusiasm I encounter. I've called on the rest of the MAPS Board to join me in the effort to personally visit as many of our local planetaria as possible. The visits I've made have been wonderful opportunities to see first-hand, the talent of our members, to help provide a personal link to the MAPS organization and leadership and to provide opportunity for discussion, and to introduce MAPS to facilities that are not yet part of the MAPS family. I look forward to visiting more of you over the upcoming months.

Speaking of opportunities to meet with colleagues, Patty Seaton has been working hard on the plans for the 2009 Conference at the Howard B. Owens Science Center. If you haven't done it yet, be sure to mark your calendars for May 13-16, 2009. It promises to be a great conference, and you don't want to miss the visit to Goddard. A number of our members also take the opportunity to meet regionally. Please remember that there is a mini-grant of $100 available to help underwrite the cost of hosting a single or half day regional meeting. Visit the website or contact the Executive Board for more information.

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PLANETARIUM NEWS

The Planets Night

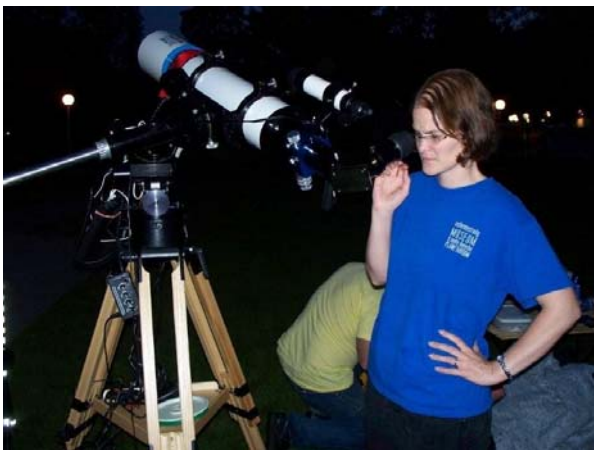
Steven LJ Russo
Planetarium Manager
Suits-Bueche Planetarium
Schenectady Museum
Schenectady, NY 12308
518-382-7890 X 253
russo@schenectadymuseum.org
www.schenectadymuseum.org

On Friday evening August 22, 2008, The Schenectady Museum and Suits-Bueche Planetarium in conjunction with the Dudley Observatory and the Albany Area Amateur Astronomers took part in The Planets Night at the Saratoga Performing Arts Center in Saratoga, New York.

While the Philadelphia Orchestra, conducted by Charles Dutoit performed Debussy's Nocturnes and Holst's The Planets, The Suits-Bueche Planetarium had tables set up for hands on Astronomy activities while the Dudley Observatory and the Albany Area Amateur Astronomers had more than a dozen telescopes set up for viewing Jupiter and other Astronomical objects.

The concert and Astronomy activities were sponsored by Rensselear Polytechnic Institute, and attracted several thousand people.

Astronomy Activities by the Schenectady Museum and Suits-Bueche Planetarium.



Megan Dominguez, Assistant Planetarium Manager of the Suits-Bueche Planetarium looks at Jupiter by a telescope set up by Dudley Observatory and the AAAA.

Photos by SLJ Russo

SAVE THE DATES
May 13-16, 2009

MAPS 2009 Conference
Howard B. Owens Science Center
Prince George's County, Maryland

Conference Host: Patty Seaton
pxts13@yahoo.com or 301-918-8750

PLANETARIUM NEWS

A few 'star' donors save a campus planetarium

Reaching for the stars, a foundation of the County College of Morris (Randolph, NJ) has exceeded its $250,000 fundraising goal to refurbish the college's planetarium.

Just three months ago, the CCM Foundation said it had collected $60,000, but an astronomical infusion of cash and pledges since then has brought the total to more than $326,000, said Joseph Vitale, foundation vice president. Advertisement

That has turned the foundation's thoughts to funding additional improvements and programs at the 36-year-old facility.

The biggest donations came from Morristown couple Joseph and Madeline Longo and the Paramus-based Emil Buehler Foundation, Vitale said.

Both the Longos and the Buehler Foundation requested that their precise contributions not be disclosed, Vitale said, but the amount given by the Longos qualified them to have the planetarium renamed in their honor.

The Longos have been longtime CCM supporters, and Joseph Longo, retired chief executive of Longo Industries in Wharton, NJ, has been a CCM trustee since January 2006. "Both have a passion for astronomy and have been to the planetarium many times," Vitale said.

A college news release quoted Longo as saying: "The planetarium at CCM has been a true community treasure for many years and has been very dear to Madeline and me. We are impressed by the resource we have here on campus and trust that our gift will assure that the planetarium will now be able to provide a unique astronomical and science experience for our students -- as well as other grade-school students from throughout the community -- well into the future."

The Emil Buehler Foundation contributes to scientific causes from a trust left by the late pioneer in aeronautics, who operated out of Teterboro Airport.

Over the years, the CCM planetarium has had 250,000 visitors, or about 14,000 a year. Most are northern New Jersey schoolchildren between the ages of 6 and 10, according to the college.

"We are thrilled by this enormously generous gift by Joe and Madeline Longo, who have been great friends and loyal supporters of CCM for many years," said college president Edward Yaw.

In addition to fresh paint and new carpeting, the planetarium needs a technology upgrade be cause its production system can run for no more than 30 minutes at a time. Otherwise, its much-repaired lighting might melt the wiring.

When installed in 1971, the Viewlex Series IIB mechanical star projector was the first of its type and had a life expectancy of about 20 years. The new planetarium, which is to open next year, will feature the Digitstar SP/SP2 projection system, and the theater will be equipped with "interactive" seating for 80.

The extra money will help add programs and maybe even more seats and other touches, Vitale said. "We'll wait until all the gifts are in and then sit down with the architect."

By Al Frank

EDUCATION COMMITTEE

Thank you to those who responded to the "how do you handle the moon hoax believers?" Suggestions ranged from 'simply ignore them' to 'we don't argue historical facts in this facility'. It was also suggested that those who believe in the 'hoax' are the same people who believe Shakespeare did not write all the works attributed to him. All respondents mentioned to keep it 'low-key', and not let anything escalate into a full blown argument.

At IPS 2008 in Chicago the international educational committee is seeking from affiliates such as MAPS the curricula we use for school group visitors. What is it you present to your first grade visitors? To your second graders? If you could please take the time and send along to me a brief summary of topics & grade level by Thanksgiving I will compile the data and forward it along to IPS. Thanks!

John Scala, Lenape Valley HS Planetarium, Stanhope, NJ
jscala@lvhs.org

A Note from the President

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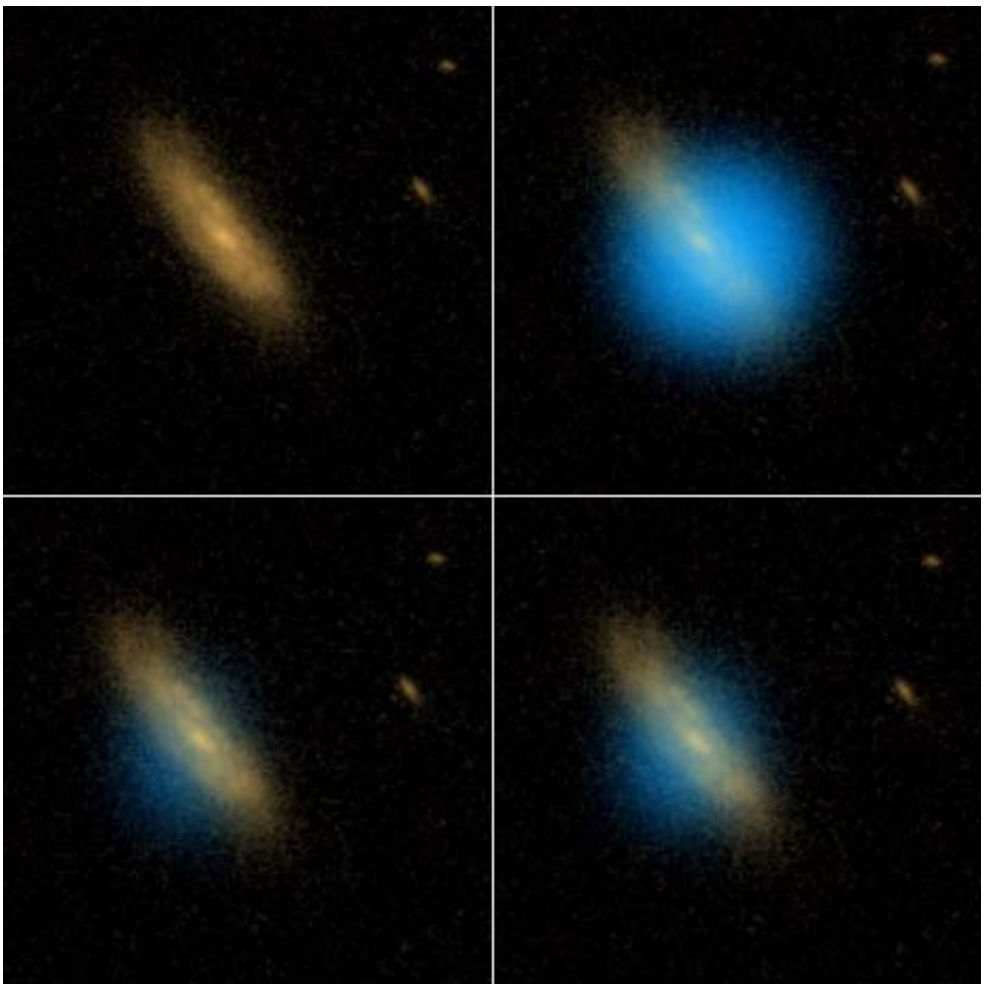
I know many of you are doing fantastic things out there. Remember, if you'd like to share what's happening at your facility, don't forget about the Featured Planetarium page on the MAPS website. For more information, contact Ted Williams.

And finally, election time is closing in and we're looking for a few good people. The positions of President-Elect, Secretary and Treasurer will be up for election in January 2009 and the deadline for nominations is November 1, 2008. Nominations may be submitted to the nomination committee chair Don Knapp, or any member of the executive committee.

Gloria Villalobos
President



Death of a Supergiant

Sequence of images shows supernova start to finish. The top left image shows the galaxy before the supernova. At top right, the bright UV flash called the shock breakout indicates a red supergiant has collapsed. At bottom left, moments later, the flash is mostly gone. As the debris expands, it heats up again and becomes brighter (bottom right). The supernova became 10 times the size of the original over the following few days, thus becoming visible to supernova hunters.

(Continued from page 1)

stars on the verge of exploding.

In this case, Schawinski and his colleagues calculated that just before its death, the star was 500 to 1000 times larger in diameter than our sun, confirming that the star was in fact a red supergiant. “We’ve been able to tell you the size of a star that died in a galaxy several billion light-years away,” Schawinski marvels.“GALEX has played a very important role in actually seeing this for a few reasons,” Schawinski says. First, GALEX is a space telescope, so it can see far-UV light that’s blocked by Earth’s atmosphere. Also, GALEX is designed to take a broad view of the sky. Its relatively small 20-inch primary mirror gives it a wide, 1.2-degree field of view, making it more likely to catch the UV flash preceding a supernova. With these advantages, GALEX is uniquely equipped to catch a supernova before it explodes. “Just when we like to see it,” Schawinski says.

For more information, visit www.galex.caltech.edu, “Ultraviolet Gives View Inside Real ‘Death Star’.” Kids can check out how to make a mobile of glittering galaxies at spaceplace.nasa.gov/en/kids/galex_make1.shtml .

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

New Books on Icy Moons

Two new books are available which explore the icy moons of Jupiter and Saturn:

Titan Unveiled: Saturn's Mysterious Moon Explored by Ralph Lorenz & Jacqueline Mitton is one of the first general interest books to reveal the startling new discoveries that have been made since the arrival of the Cassini-Huygens mission to Saturn and Titan. The book is an insider's account of the scientific community's first close encounter with an alien landscape of liquid methane seas and turbulent orange skies. Amid the challenges and frayed nerves, new discoveries are made, including methane monsoons, equatorial sand seas, and Titan's polar hood. Lorenz and Mitton describe Titan as a world strikingly like Earth and tell how Titan may hold clues to the origins of life on our own planet and possibly to its presence on others.

In **Unmasking Europa: The Search for Life on Jupiter's Ocean Moon**, Richard Greenberg tells the story of how he and his team of researchers came to believe that the surface of Europa is in fact a crust so thin that it can barely hide an ocean of liquid water below. He shows how the ocean is warmed by the friction of tidal movements in this small moon as it orbits around immense Jupiter. The book also provides unique insights into how "big science" gets done today, and it is not always a pretty picture. From his perspective as professor of Planetary Science at the University of Arizona, and a quarter century-long membership on the Imaging Team for NASA's Galileo mission, Greenberg describes how personal agendas (including his own) and political maneuvering (in which he received an education by fire) determined a lot about the funding, staffing, and even the direction of the research about Europa.

SN 1996cr:
Powerful Nearby Supernova Caught by Chandra

This composite image shows the central regions of the nearby Circinus galaxy, located about 12 million light years away. Data from NASA's Chandra X-ray Observatory is shown in blue and data from the Hubble Space telescope is shown in yellow ("I-band"), red (hydrogen emission), cyan ("V-band") and light blue (oxygen emission). The bright, blue source near the lower right hand corner of the image is the supernova SN 1996cr, that has finally been identified over a decade after it exploded.

Optical images from the archives of the Anglo-Australian Telescope in Australia show that SN 1996cr exploded between February 28, 1995 and March 15, 1996. Among the five nearest supernovas of the last 25 years, SN 1996cr is the only one that was not seen shortly after the explosion. It may not have been noticed by astronomers at the time because it was only visible in the southern hemisphere, which is not as widely monitored as the northern.

The supernova was first singled out in 2001 as a bright, variable object in a Chandra image. Despite some exceptional properties, its nature remained unclear until years later, when scientists were able to confirm this object was a supernova. Clues in data from the European Southern Observatory's Very Large Telescope led the team to search through data archives from 18 different telescopes, both in space and on the ground, nearly all of which was from archives. This is a remarkable example of the new era of “Internet astronomy”.

The Circinus galaxy is a popular target for astronomers because it contains a supermassive black hole that is actively growing, and it shows vigorous star formation. It is also nearby, at only about 4 times the distance of M31. Therefore, the public archives of telescopes contain abundant data on this galaxy.

Constellation
c/o Kevin Conod
The Newark Museum's
Dreyfuss Planetarium
49 Washington Street
Newark, NJ 07102