



CONSTELLATION

Summer 2010, No. 2



"Wormholes were first introduced to the public over a century ago in a book written by an Oxford mathematician. Perhaps realizing that adults might frown on the idea of multiply connected spaces, he wrote the book under a pseudonym and wrote it for children. His name was Charles Dodgson, his pseudonym was Lewis Carroll, and the book was Through The Looking Glass."

— Michio Kaku

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Black Holes No Joke

by Dr. Tony Phillips



Laser Interferometer Gravitational-wave Observatory in Livingston, Louisiana. Each of the two arms is 4 kilometers long. LIGO has another such observatory in Hanford, Washington.

Kip Thorne: Why was the black hole hungry?

Stephen Hawking: It had a light breakfast!

Black hole humor—you gotta love it. Unless you're an astronomer, that is. Black holes are among the most mysterious and influential objects in the cosmos, yet astronomers cannot see into them, frustrating their attempts to make progress in fields ranging from extreme gravity to cosmic evolution.

How do you observe an object that eats light for breakfast?

"Black holes are creatures of gravity," says physicist Marco Cavaglia of the University of Mississippi. "So we

(Continued on page 11)

SNAPSHOTS FROM MAPS 2010



Photos by Steve Russo and Steve Innes. For additional photos see the MAPS Yahooogroup site: tech.groups.yahoo.com/group/maps-l

Above: Steve Mitch and Sam Storch accepting their MAPS Distinguished Service Awards.



Right: Susan Button giving the Margaret Nobel Address



Left: The Southworth Planetarium at the University of Southern Maine

MAPS 2010



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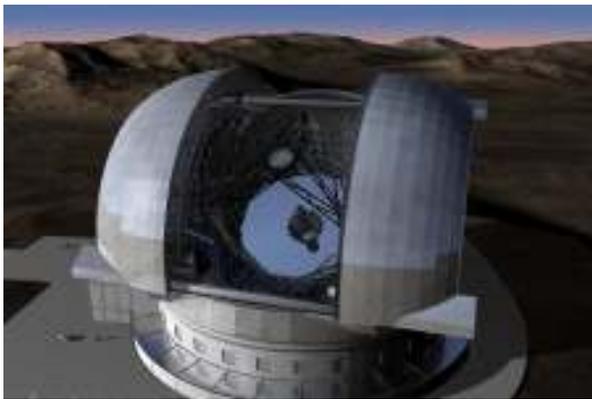
The MAPS 2010 conference group photo is available on the MAPS Yahoo groups site (tech.groups.yahoo.com/group/maps-l). If a member wants an 8 X10 sent to them, e-mail Steve Innes at sinnes@usm.maine.edu. The photo was taken by Paul Andrew Nakroshis. His web site is paulandrewphoto.com.

SAVE THE DATE MAPS Conference 2011 May 4-7, 2011

The 2011 MAPS conference will be co-hosted by Don Knapp (H.W. Ray planetarium, Centennial School District, Warminster PA), Kim Small (Upper Dublin School District planetarium, Dresher PA), and Keith Johnson (Edelman Planetarium, Rowan University, Glassboro NJ). Dates for this event will be May 4-7, 2011. More details will be available on the MAPS Web site, but mark the dates now!



The H.W. Ray Planetarium, Warminster PA



European Extremely Large Telescope

The site for the European Extremely Large Telescope site has been chosen.

The 42 meter diameter telescope will be built at Cerro Armazones in Chile's Atacama Desert.

The diameter of the telescope's primary mirror be almost half the length of a soccer field and will be made up of 1,000 hexagonal segments. It will gather 15 times more light than the largest optical telescopes currently available.

Scientific goals of the telescope include discovering Earth-like planets and understanding the formation of the first objects that formed (primordial stars, galaxies and black holes).

Start of operations planned for 2018.
For more info see:
www.eso.org/public/teles-instr/e-elt.html

NASA Launches

Nov. 1, 2010

STS-133, Space Shuttle Discovery

Discovery will deliver the Express Logistics Carrier 4, a Multi-Purpose Logistics Module and spare parts to the Space Station.

Nov. 22, 2010

Glory

The Glory Mission will help increase our understanding of the Earth's energy balance by collecting data on the properties of aerosols and black carbon in the atmosphere and how the Sun's irradiance affects the Earth's climate.

Feb. 26, 2011

STS-134, Space Shuttle Endeavour

Space shuttle Endeavour will deliver an EXPRESS Logistics Carrier-3 and an Alpha Magnetic Spectrometer to the Space Station.

Aug. 5

Juno

The Juno spacecraft is to orbit Jupiter's poles 33 times to find out more about the gas giant's origins, structure, atmosphere and magnetosphere.

Nov. 25

Mars Science Laboratory

The Mars Science Laboratory is a rover that will assess whether Mars ever was, or is still today, an environment able to support microbial life and to determine the planet's habitability.

For details, updates and more information see:
<http://www.nasa.gov/missions/highlights/schedule.html>

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A Note from the President

Dear Colleagues:

The 2010 MAPS Conference in Portland, Maine, hosted by Jerry LaSala, Steven Innes and Edward Gleason of the University of Southern Maine's Southworth Planetarium, was a great success. Several very interesting paper presentations and workshops were given throughout the conference. Vendor presentations and demonstrations were quite remarkable, showing and describing the latest capabilities in the rapidly changing technology sector.

Several very exciting initiatives for MAPS were announced during the conference as a result of priority items set forth by the Strategic Planning Committee established during last fall's Board meeting. The committee met the last weekend in January and again the first weekend of May to establish short and long term goals and objectives and to prioritize these in a manner that best serves the interests of MAPS and its members.

The **MAPS website is being upgraded**. The MAPS Board has hired Janet Cullen, a professional webpage designer, to give the MAPS website a whole new, professional look. Janet presented a sample "restructured" website during a special meeting to Steve Mitch, Patty Seaton, Ted Williams and Lee Ann Hennig. We were all very impressed by her presentation and the myriad of items that can be incorporated into the new website. The MAPS Board has approved the contract with Janet as well as securing a new host server and a new URL domain name which will be:

www.mapsplanetarium.org

Our contract with Janet also provides training for maintenance and upgrades to the site as well as troubleshooting expertise for MAPS Webmaster, Ted Williams.

The new website will be up and running within the next several weeks and we look forward to having a great new website which will be easier to access and navigate. Ted will soon begin making the transition from the old website to the new site by creating a link to automatically redirect inquiries to the new site. Please be looking for messages from Ted on MAPS-L relating to construction progress as well as accessibility information for the new site.

The **MAPS Education Committee**, chaired by John Scala, is in the process of "being ramped up". The MAPS Board has made the Education Committee a vital priority component of the Strategic Plan and will play a key role in the long range goals and objectives for the organization. A special meeting chaired by John was held during the conference and was attended by a number of members interested in revitalizing the committee and moving it in a direction that will become a valuable service to the organization. An educational section will be incorporated into the quarterly issues of The Constellation. This section will feature an article submitted by MAPS members focusing on a particular topic.

(Continued on page 7)

It is also hoped that members having an interest in sharing their experience with best practices in planetarium/ astronomy education will join in offering a special educational workshop or paper session during future conferences.

If you have an interest in serving on the Education Committee or would like to help the committee by submitting an article or participating in a conference session on education, please contact John Scala at jscala@lvhs.org

I also want to welcome **12 new members** into the MAPS family. They are: Jennifer Lee, National Geographic Society, Washington D.C.; Tim Collins and Kevin Williams, Whitworth Ferguson Planetarium, Lockport, NY; Suzanne Morris, Hayden Planetarium, New York, NY; Dustin Angell, Museum of Science and Technology, Syracuse, NY; Marc Horowitz, Hubble Planetarium, Brooklyn, NY; Kenshi Ito, Konica/Minolta Corporation; Matt Polak and Chuck Rau, Raven Systems Design, Brecksville, OH; Annette Southern-Barnett, Sky-Skan Corporation, Nashua, NH; Steve Pushka, Evans & Sutherland, Salt Lake City, UT and Patrick McQuillan, Research Institutions for Seismology, Washington, D.C.

I am pleased to announce that a site for the **2011 conference** has been selected. Keith Johnson, Kim Small and Don Knapp are teaming up to act as the hosts for the conference and will offer their facilities as locations for dome presentations for both delegates and vendors as well as show presentations. More about the 2011 conference will be forthcoming in another section of The Constellation.

MAPS has been associated with the National Science Teachers Association (NSTA) as a Chapters and Associated Groups (CAG) member for quite some time. However, MAPS will now become much more involved with the NSTA by sending representatives to a couple of annual NSTA functions: the National Science Educators Congress and the National Science Teachers Association/CAG conference.

Lee Ann Hennig and I will represent MAPS at the National Science Educators Congress (NSEC) to be held in Las Vegas, July 21-24. The NSEC was established to discuss national issues dealing with science education, to achieve resolutions and offer recommendations on these issues to the NSTA and the National Science Education Committee. One of the important issues to be discussed this year is the writing of the new National Science Standards that will take place within the next few months. We want to have input from planetariums this time around and will be actively pursuing that goal.

Lee Ann and I will be teaming up with GLPA representatives Gary Sampson and Bart Benjamin in promoting the importance of planetariums during the Congress. Emphasis will be placed on the value of planetariums in astronomy curriculum design and content retention that ultimately leads to achieving higher test scores.

In another matter related to the new National Science Standards, MAPS is teaming up with GLPA and hopefully, other U.S. regional planetarium organizations in formulating a position paper on the importance of planetariums in astronomy education. The purpose of this collaboration is to construct a position paper on astronomy education in K-12 curriculum with planetariums as an essential component and to create an opportunity for all U.S. regional planetarium organizations to unify their members to "speak as one voice" in working with the National Research Council in the formulation of the new National Science Standards. I have asked several of you for your valuable input toward this endeavor and I greatly appreciate your participation.

Great things are happening and I am glad that you are a part of it!

Steven Mitch

President



Constitutional Review Committee

Steven LJ Russo, Janet C Russo, Megan EN Dominguez

As presented at the Business Meeting at the Middle Atlantic Planetarium Society annual conference on May 22, 2010, the Constitution Review Committee is recommending an amendment to the By-Laws concerning the "Purpose" of the Middle Atlantic Planetarium Society. We are considering this change so as to more accurately reflect the mission of our organization.

This proposed amendment will be placed on the ballot with MAPS officers in January of 2011.

Current Purpose:

Article II
Purpose

Section 1. The Society shall promote excellence in all facets of planetarium education and programming.

Section 2. The Society shall endeavor to upgrade the personnel and the facilities of its members by becoming a source of information and a medium for exchange of ideas among its members.

New Purpose:

Section 1. The Society shall cultivate, foster and promote excellence in all facets of the planetarium profession, including research, education and programming.

Section 2. The Society shall strive to advance the personnel and facilities of its members by being a source of information and a medium for the exchange of ideas, services and resources among its membership.

PLANETARIUM NEWS

Dateline June 21, 2010

At the summer solstice, a planetarium is renamed



Half Hollow Hills School district (HHH) named the planetarium at HHH High School East, The Peter F. Connors Planetarium.

The event took place at a school board meeting. Dennis Kurtz, his assistant for 25 years made the presentation address. Peter was presented with a plaque to hang in his home and a name plate for the planetarium. Peter was in attendance with his wife, Lianne; Dennis Kurtz, and Dennis' wife Alice. Also in attendance was Tom Carey (third director), the present director Tom Affatigato., and numerous colleagues.

Peter was the director at the HHH for 31 years. He opened the planetarium in 1967 and wrote the original curriculum which he continually updated throughout the years. Peter inspired and led the team that created the HHH Shuttle Project, which is still in operation today --- 24 years later. Since Peter's retirement in 1998, the HHH Planetarium has had three directors: Dennis Kurtz, Tom Carey and Tom Affatigato.

Peter is a long-time members of MAPS, former President and Board member as well as recipient of the Distinguished Service Award.

If you are ever in the neighborhood of Dix Hills, NY (Long Island), stop in and see The Peter F. Connors Planetarium.





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Black Holes No Joke

(Continued from page 1)

have to use gravitational waves to explore them.”

Enter LIGO—the NSF-funded Laser Interferometer Gravitational-wave Observatory. According to Einstein’s Theory of General Relativity, black holes and other massive objects can emit gravitational waves—ripples in the fabric of space-time that travel through the cosmos. LIGO was founded in the 1990s with stations in Washington state and Louisiana to detect these waves as they pass by Earth.

“The principle is simple,” says Cavaglia, a member of the LIGO team. “Each LIGO detector is an L-shaped ultra-high vacuum system with arms four kilometers long. We use lasers to precisely measure changes in the length of the arms, which stretch or contract when a gravitational wave passes by.”

Just one problem: Gravitational waves are so weak, they change the length of each detector by just 0.001 times the width of a proton! “It is a difficult measurement,” allows Cavaglia.

Seismic activity, thunderstorms, ocean waves, even a truck driving by the observatory can overwhelm the effect of a genuine gravitational wave. Figuring out how to isolate LIGO from so much terrestrial noise has been a major undertaking, but after years of work the LIGO team has done it. Since 2006, LIGO has been ready to detect gravitational waves coming from spinning black holes, supernovas, and colliding neutron stars anywhere within about 30 million light years of Earth.

So far the results are ... nil. Researchers working at dozens of collaborating institutions have yet to report a definite detection.

Does this mean Einstein was wrong? Cavaglia doesn’t think so. “Einstein was probably right, as usual,” he says. “We just need more sensitivity. Right now LIGO can only detect events in our little corner of the Universe. To succeed, LIGO needs to expand its range.”

So, later this year LIGO will be shut down so researchers can begin work on Advanced LIGO—a next generation detector 10 times more sensitive than its predecessor. “We’ll be monitoring a volume of space a thousand times greater than before,” says Cavaglia. “This will transform LIGO into a real observational tool.”

When Advanced LIGO is completed in 2014 or so, the inner workings of black holes could finally be revealed. The punchline may yet make astronomers smile.

Find out more about LIGO at <http://www.ligo.caltech.edu/>. The Space Place has a LIGO explanation for kids (of all ages) at <http://spaceplace.nasa.gov/en/kids/ligo>, where you can “hear” a star and a black hole colliding!

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

EDUCATION COMMITTEE

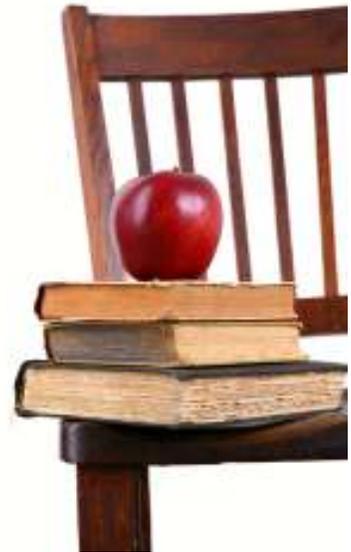
John Scala, Lenape Valley HS Planetarium
Stanhope, NJ, jscala@lvhs.org

The committee met in Maine during the recent MAPS conference. No matter the technology your facility makes use of, EDUCATION is the key to our existence and survival as planetarians. We agreed that the 'Constellation' remains our best vehicle in sharing our wealth of knowledge, experience, advice, and expertise among ourselves. ANYONE, not just members of our committee, is encouraged to submit a lesson, activity, lab exercise, observational activity, etc for the good of the membership. In recognition for your submissions you will receive a discounted rate for the MAPS conference registration fee for that year. Networking and sharing remain the cornerstones of why MAPS exists.

Please consider making part of what you do so well available to others so that they might enjoy the successes you have achieved!

NASA EDUCATION MATERIALS

NASA offers a tremendous amount of free educational materials in the form of lessons, webcasts, podcasts, seminars and workshops. If you have not yet taken the time or opportunity to review these resources check out www.nasa.gov/education. Enjoy your summer!



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A horizontal strip of five small images showing different planetarium and exhibit designs. From left to right: a modern building at night, a planetarium interior with a large dome, a planetarium interior with a large dome, a modern building with a glass facade, and a planetarium interior with a large dome.

PLANETARIUM NEWS

Mini MAPS/PIPS Conference September 2010

A mini MAPS/PIPS conference will be held in Western New York on the afternoon of Friday September 17th and all day on Saturday the 18th. Any member of MAPS or those interested in planetariums are invited to attend. More information will be forthcoming on various listserves, sites and mailings. The mini conference will stress formal and informal education under the dome. Bring the whole family and enjoy exploring the historic Erie Canal and Locks area of Lockport, New York. (See www.elockport.com for more information) We will work hard to keep the cost as close to zero as we possible can. Professional development hour certificates will be available for those who need them.

Friday night will be under the 30' dome at the Williamsville Space Lab Planetarium with Planetarium Director, Mark Percy. Information will also be posted at www.Williamsvillek12.com. On Saturday, we hope to feature portable domes during the day and an optional after dinner visit to SUCB Whitworth Ferguson Planetarium. Additional questions can be sent to Kathy Michaels at kmmichaels@roadrunner.com.

MAPS Fellows Awards



MAPS Fellows awards are given to members who have made significant contributions to the Society and the Planetarium profession. The first Fellows Awards were presented to Steve Mitch, Patty Seaton, Steve Russo, Sam Storch, Paul Krupinski, Ted Williams (pictured above at the 2010 MAPS Conference), Gloria Villalobos, Don Knapp, Rodney Martin and Kevin Conod.

ASTROFEST



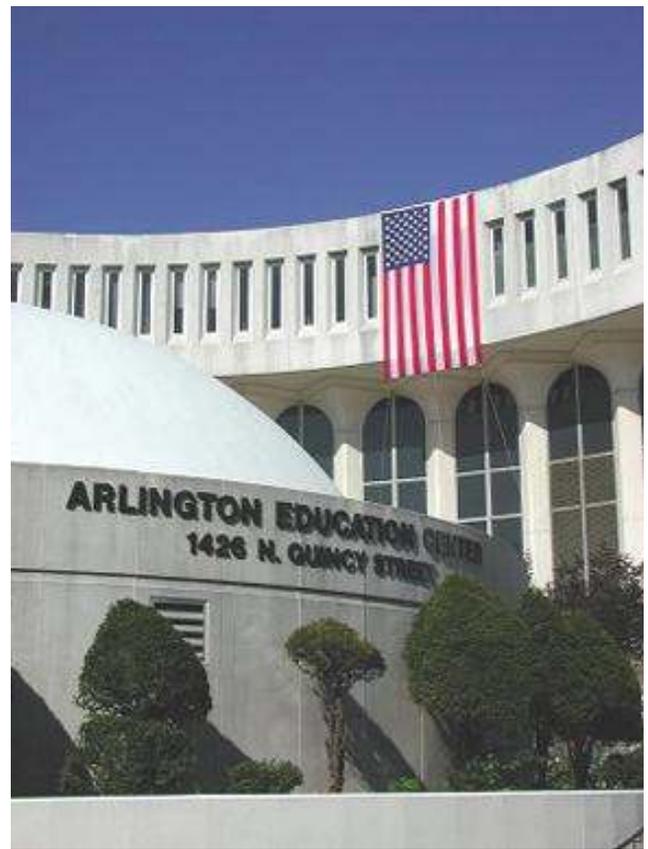
The Newark Museum hosted AstroFest, a fun-filled family festival about astronomy and planetary science on May 22. More 2,000 people enjoyed hands-on activities, views through solar telescopes, a 35-foot tall space shuttle slide, face painting, a display of meteorites and an exhibit of high powered model rockets. Mike Francis appeared on stage as Galileo, who regaled visitors with his amazing astronomical discoveries with a spyglass.

David M. Brown Planetarium

A grassroots campaign to save the Brown Planetarium in Arlington, VA is underway. The Planetarium is named for the astronaut who perished in the Space Shuttle Columbia accident.

The Arlington School Board voted to keep it open only part-time through June 30, 2011 -- two days a week, limited to grades K-2. The staff was cut drastically. If funds are not raised with a year the planetarium will be closed. The Superintendent has set a timetable for the Friends of the Planetarium to raise the \$402,800 needed to upgrade the facility by June 30, 2011.

For more information see:
www.saveplanetarium.org



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