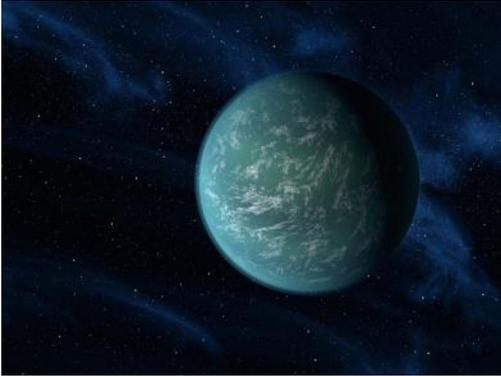




CONSTELLATION

Summer 2013, No. 2

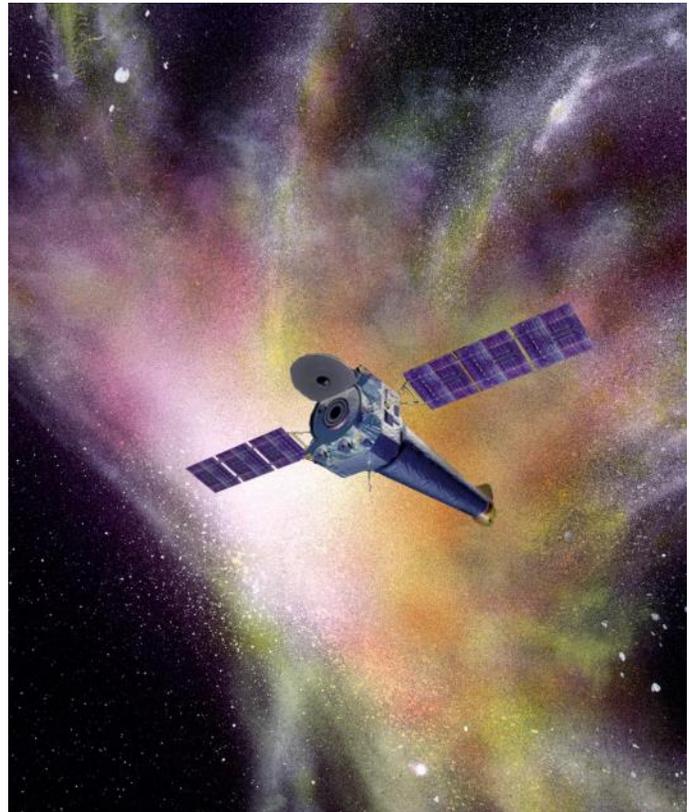


“In very different ways, the possibility that the universe is teeming with life, and the opposite possibility that we are totally alone, are equally exciting. Either way, the urge to know more about the universe seems to me irresistible, and I cannot imagine that anybody of truly poetic sensibility could disagree.”

— *Richard Dawkins*

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High-energy Spy

By Dr. Martin C. Weisskopf

The idea for the Chandra X-Ray Observatory was born only one year after Riccardo Giacconi discovered the first celestial X-ray source other than the Sun. In 1962, he used a sounding rocket to place the experiment above the atmosphere for a few minutes. The sounding rocket was necessary because the atmosphere blocks X-rays. If you want to look at X-ray emissions from objects like stars, galaxies, and clusters of galaxies, your instrument must get above the atmosphere.

Giacconi's idea was to launch a large diameter (about 1 meter) telescope to bring X-rays to a focus. He wanted to investigate the hazy glow of X-rays that could be seen from all directions throughout the sounding rocket flight. He wanted to find out

(Continued on page 2)



(Continued from page 1)

whether this glow was, in fact, made up of many point-like objects. That is, was the glow actually from millions of X-ray sources in the Universe. Except for the brightest sources from nearby neighbors, the rocket instrument could not distinguish objects within the glow.

Giacconi's vision and the promise and importance of X-ray astronomy was borne out by many sounding rocket flights and, later satellite experiments, all of which provided years-, as opposed to minutes-, worth of data.

By 1980, we knew that X-ray sources exist within all classes of astronomical objects. In many cases, this discovery was completely unexpected. For example, that first source turned out to be a very small star in a binary system with a more normal star. The vast amount of energy needed to produce the X-rays was

provided by gravity, which, because of the small star's mass (about equal to the Sun's) and compactness (about 10 km in diameter) would accelerate particles transferred from the normal star to X-ray emitting energies. In 1962, who knew such compact stars (in this case a neutron star) even existed, much less this energy transfer mechanism?

X-ray astronomy grew in importance to the fields of astronomy and astrophysics. The National Academy of Sciences, as part of its "Decadal Survey" released in 1981, recommended as its number one priority for large missions an X-ray observatory along the lines that Giacconi outlined in 1963. This observatory was eventually realized as the Chandra X-Ray Observatory, which launched in 1999.

The Chandra Project is built around a high-resolution X-ray telescope capable of sharply focusing X-rays onto two different X-ray-sensitive cameras. The focusing ability is of the caliber such that one could resolve an X-ray emitting dime at a distance of about 5 kilometers!

The building of this major scientific observatory has many stories.

Learn more about Chandra at www.science.nasa.gov/missions/chandra. Take kids on a "Trip to the Land of the Magic Windows" and see the universe in X-rays and other invisible wavelengths of light at spaceplace.nasa.gov/magic-windows.

Dr. Weisskopf is project scientist for NASA's Chandra X-ray Observatory. This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

What's on tap for the 2013 MAPS Planetarium Conference?

The official conference will begin on July 17th, 5:30 p.m., at the Earth and Space Science Lab in Frederick, Maryland, and will continue through noon on Saturday, July 20th. Please join us for a great conference offering many opportunities for professional development.

Two special pre-conference events are being held this year. Please consider them in your conference plans.

Livest will take place throughout the day on Tuesday, July 16th. Sue Button has organized this event. It will begin at 9:00 a.m. and conclude at 5:00 p.m. It is free! Lunch is being provided! A variety of lessons will be presented that you can utilize in your planetarium with students and audiences. Portable domes will be in the gymnasium as well as the planetarium at the ESSL.

A field trip will take place on Wednesday, July 17th, to the **Robinson Nature Center** in Columbia, Maryland. Joel Goodman and the staff of RNC will host the participants. Lunch will be provided by Spitz, Inc. Special guest, Verne Rice, daughter of Armand Spitz will address the group after lunch. Activities in the planetarium using the Sci-dome will follow. It is free!

Plenty of time will allow you to return to the hotel before the evening events begin.

A variety of activities will take place during the regular dates of this year's MAPS conference.

Plenary sessions, mini lessons, talks, and demonstrations will include:

- ◆ Baton Rouge to Italy & Two weeks in Italy – Patty Seaton
- ◆ Light Speed/Earth/Sun/Alpha Centauri – a scale model – Jeff Grills
- ◆ But Wait, There's More! Creating a 'Package Deal' with a Full-Dome Show – Deb Lawson
- ◆ An Update on Astronomy Education Research - Kim Small
- ◆ Life and Death of Stars – Mark Bowman
- ◆ What I've Learned Over the Last 25 Years! - Steve Dubois
- ◆ NGSS Update – Lee Ann Hennig
- ◆ To See the Universe – Patty Seaton
- ◆ Light Speed/Earth/Sun/Alpha Centauri – a scale model – Jeff Grills
- ◆ The Sky to Watch – 2013 – Alan Davenport – (planetarium – Wed. Night)
- ◆ Losing the Dark – Loch Ness

Posters:

- ◆ Universe in Transformation – Joseph Clinton
- ◆ MAPS Education Research Grant – Kim Small
- ◆ Life Beyond Earth – Wendy Ackerman
- ◆ Scholarships to Enter Our Field – Thomas Hamilton

(Continued on page 6)

CONTACT!

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President's Message

Making Connections

Arc to Arcturus, Speed on to Spica! And right now, make a triangle with Saturn! I had so much fun teaching second graders at the end of the school year how to connect the stars to find Saturn in their night sky. And here on summer break, I have enjoyed doing this every evening in the "real" sky! Also in our second grade class we had the students chart two months of Moon phases to discover the pattern. I get excited to think how we will expand on Moon phases lessons when we see these same students in fifth grade and then again in eighth grade! Call it spiral learning, call it scaffolding, call it whatever: it is all part of making important connections and doing so with one of the most powerful tools of teaching astronomy: the planetarium!

Isn't that what our organization is all about? Helping students and the general public make these important connections? To gently teach the truth about the "Super Moon" while encouraging people to go out and look at it anyway?! My last 20 plus years working in this field has brought me so much joy in helping people make connections. And making them myself.

As I step down from President to Past President, I reflect on the last 10 years I have served on the MAPS Executive Board and am happy to have been a part in helping my colleagues make some of their own personal connections. Our conferences are always energy-infusing! To hear what others are doing, to see what resources are available, to adapt our own organization to better benefit the membership: wow! It's been an incredible ride! And I'm not going anywhere just yet, I have two more years to serve in the background. To work with an amazing team with Alan Davenport and Jerry Vinski. To continue to help you make important connections. As Buzz Lightyear said, "To infinity... And beyond!"

Patty Seaton

MAPS President
Planetarium Director, H.B. Owens Science Center
Prince George's County Public Schools, MD
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It's All About The Stars!

(whether it is optical-mechanical, digital, or both)

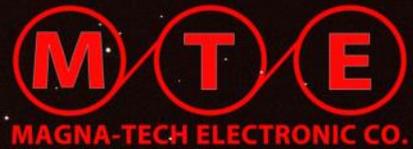
Background is First-Light photograph of starfield by Konica Minolta's GEMINISTAR III projected onto 18.3 m dome at Vanderbilt Planetarium, Centerport, NY, USA

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KONICA MINOLTA

MAPS CONFERENCE UPDATE

(Continued from page 3)

Workshops – 45 minutes

- ◆ Earth Sun Moon Models – Mark Bowman (classroom) (20 participants – free)
- ◆ New Horizons to Pluto – April Whitt (25 participants – free)
- ◆ From Solar System to Exo-planets: Do it in Live Session! – RSA Cosmos (20 participants – free)
- ◆ Nexus Tablets – Dawn Getzandanner (classroom) (20 participants, tablets provided – free)
- ◆ Raising a Million \$ - Fund Raising Ideas - Jeff Grills (1000 participants - \$1,000,000 each)

Workshops – 90 minutes

- ◆ Planetarium Activities for Student Success – Sue Button (20 participants – free)
- ◆ Blender for Beginners – Waylena McCully (classroom) must bring own lap top (10 participants – free)
- ◆ Photography Session Using the Planetarium – Kyra Elliot (20 participants – free)

Five full dome planetarium shows will be offered throughout the conference, as well.

We have had a great support from 11 vendors for this particular conference. Their generosity has helped make for great possibilities! They will be highlighting their newest equipment and programs in the Vendor Hall housed in the gymnasium next to the ESSL. A variety of ideas and options under the dome will be displayed and various components of their newest product offerings in various plenary sessions will be highlighted.

Four varied speakers are on tap for the conference!

- ◆ Dr. Christopher Horne, Frederick County Public Schools, will speak at Thursday's luncheon – *"Finding Space Under the Stars"*
- ◆ Dr. Kevin Williams, Buffalo State College, will speak at Friday's luncheon - *"Mapping Geologic History in Margaritifer Terra, Mars"*
- ◆ Stephanie Bednarek, Space X, will speak at Thursday's Dinner held at the Delaplaine Center – *"The Next Step in Space"*
- ◆ Don Knapp will give the Margaret Noble Address at Friday Night's Banquet at the Holiday Inn – *"Lost in Space"*

If you haven't registered yet, please do as soon as possible.

If you change your mind and would like to attend Tuesday's Livefest or Wednesday's Field Trip, please let us know.

If you have any questions, please contact Mark Bowman Mark.bowman@fcps.org or Jeff Grills Jeffrey.grills@fcps.org or you can call 240-236-2694.

PLANETARIUM NEWS

York Learning Center Planetarium



The York Learning Center planetarium has had a good year. We continue to have public programs on the second Friday of the month during the school year and private programs for school groups and scouts throughout the year.

The IPS conference in Baton Rouge really changed the way we do programs. "Max Goes to the Moon" has been a big hit with families and school groups. I enjoyed seeing so many of the projector options available at IPS, however, when a vendor said their 'low cost' projector was only \$300K, I had to laugh. I saw Ash Enterprises' Warped media, but it was too expensive too. Adam Thanz happened to be next to me and commented that the system could be made with a projector and mirror for

much less, so I got more information from him, talked to Paul Bourke and John Hare and bought a mirror and bright HD projector. This spring we showed *Flight Adventures* as our first full dome movie. This fall, we will show *Cosmic Castaways* and Google's *Lunar X Prize* in full dome.

In May when *Flight Adventures* premiered in our planetarium, I talked with the audience about their experience with it compared to a regular rectangle video of *The Planets* that they had seen the previous hour. Both programs were enjoyed, however, the *Flight Adventures* was preferred for the "environment".

Todd Ullery
Planetarium Director
York Learning Center Planetarium
York County Astronomical Society
www.ycas.org

Astronomy Day at East Kentucky Science Center



Over 125 people showed up at the East Kentucky Science Center and Planetarium for National Astronomy Day activities on April 20th, 2013.

Along with Planetarium shows throughout the day, there were activities and demonstrations relation to Heliophysics.

In the planetarium before each show, the audience had a chance to view current images of the Sun from the Solar Dynamics Observatory and

(Continued on page 8)

PLANETARIUM NEWS

SOHO. People also had a chance to view the Sun through the Science Center's Coronado solar telescopes and through eclipse glasses.

In the classroom and exhibit hall, adults and children made models of the Sun out of cookies, Twizzler sticks, chocolate chips and frosting, and also got to make Sundials from the NASA SDO website, and "construct" UV Solar Bead Bracelets.

Funding for these activities came from a NASA workshop that Science Center Director, Steve Russo attended in the Fall at the NASA Goddard Spaceflight Center.



Door prizes and other Astronomical handouts were supplied by Astronomy Magazine.

Steven LJ Russo
Director, East Kentucky Science Center & Planetarium
Big Sandy Community and Technical College
One Bert T. Combs Drive
Prestonsburg, KY 41653
srusso0002@kctcs.edu
606-889-4809

New Connecticut Planetarium

The new planetarium at the Glastonbury-East Hartford Magnet School opened on April 11.

Its is a gorgeous new immersive science theater with a super advanced audio-video-control and lighting technologies.

Ite features an Astro-Tec dome and a Spitz SciDome HD. Bowen Technovation managed the construction and system installations. Architects were Fletcher Thompson Architects.





2013 ELECTION RESULTS

Congratulations to all!
Special thanks to candidate, Jeff Dunn, for running.

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EDUCATION COMMITTEE

As many of you are aware, I will be retiring within the next year or two from the planetarium field. I have begun the process by resigning my position as MAPS Education Committee chairperson. As such, this will be my final “official” submission to the *Constellation*. I say “official,” because any one with news of note is welcome to submit it (within the editorial guidelines of the newsletter!). MAPS was founded as a means for the isolated pioneers of planetarium education spread throughout the region to network with each other, to share tips, techniques, concerns, successes and the like. This remains the central mission of the organization. However, the organization is not limited to its Officers or Board members - YOU are MAPS!!! WE are MAPS!!! SHARE your experiences....SHARE your triumphs....SHARE your successes....Shine the spotlight onto yourself & your efforts.... We spend so much of our time in the darkness, we seem to shy away from the light! Embrace the opportunity to let others know of all the good things going on under your dome.



I joined MAPS in time for its 25th anniversary conference, and it looks like I'll be leaving as the 50th anniversary conference rolls around. So many things have changed! So many people (and facilities) have come and gone. Technology has taken the planetarium to unbelievable new heights. Yet I believe that at its CORE the planetarium remains a CLASSROOM, and the planetarium professional behind the console remains a teacher. That's why it is so vital to remember that while it might be your 500th lecture on the pointers finding the North Star, for that first grader sitting in your audience it's their first experience, and you have the power to make it life changing for that child. They might be a future starship captain! No matter what new innovation might become the “next big thing”, the “oohhs” and “aaahs” as the lights come down and the stars shine forth will never change. The magic of what happens in between the lights dimming and the lights returning lies with you!

My thanks to those of you who have graciously commented on some of my conference presentations over the years, as well as some of my submissions to the *Constellation*. I hope they have served to help further astronomy education. When asked what my occupation is I reply “teacher”, with the coolest classroom in my school. When people learn that it is a planetarium, their “oooohs” and “aaahhs” indicate just how much the public IS INTERESTED in what we do. It has been a privilege to have shared the wonders of the night with them, and to have been of service to you.

John Scala
 Lenape Valley Regional High School
 Stanhope, NJ
jscala@lvhs.org

IN SEARCH OF: AWARD NOMINATIONS

Share recognition of your fellow MAPS member's efforts to keep the Planetarium experience and community strong - nominate them for an Exceptional Service award today!

Members can also self-nominate themselves for a MAPS Fellow award (see criteria and application on the MAPS website: <http://www.mapsplanetarium.org/category/awards/>).

Send nominations to Wendy Ackerman by mail or e-mail:

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Rebirth in Okayama

Fifty years after the original Okayama, Japan planetarium opened in the prefectural Children's Hall, it has now been totally reborn with a new CHRONOS II HYBRID system, under the administration of the Okayama Prefectural Lifelong Learning Center Sci-pia. Located on Japan's Seto Inland Sea, the planetarium lies within the city's educational district, amid high schools, universities, and parks.

The newly renovated 15 meter dome is called the "Future Science Dome," and it certainly is the future of planetarium technology, made real today... by GOTO INC. It utilizes the new LED-illuminated CHRONOS II star projector and a synchronized 4K-resolution video system featuring two centrally-mounted video projectors.

The Okayama staff enjoys presenting live sky programs, so the CHRONOS II is a natural choice. Its sky, it's spectacular 10,000,000 star Milky Way, and the live manual control via the GOTO HYBRID console all make live programming easy, accurate, and very, very realistic.

When combined with new seating, new surface panels for the projection dome, and an overall new outlook on astronomy education, the Okayama planetarium truly has been reborn for a new life serving the next generation of Okayama citizens.



To learn more, contact:

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CONSTELLATION DEADLINES

The Constellation is published quarterly near the equinoxes and solstices. Please keep in mind the following deadlines:

Cover Date	Deadline
June 2013	Friday, Jun. 7
September 2013	Friday, Sep. 7
December 2013	Friday, Dec. 6

Submissions should be sent to the editor:

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COMMITTEES

Members of the Middle Atlantic Planetarium Society have an opportunity to serve on committees that keep the membership informed on the latest developments happening within the organization. If you are interested in getting involved and volunteering for one of these committees, contact a member of the Executive Board or the appropriate committee chair for more information.

Committees:

- Audit
- Awards
- Constitution
- Education
- Elections
- Membership
- Program
- Publication
- Website

For complete list of committee members and chairs see the MAPS website at:

www.mapsplanetarium.org/category/committees

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