400 Years of the Telescope

A Journey of Science, Technology and Thought

A publication of the US IYA2009 Program

April 2009

The Spitzer Space Telescope is the fourth and final of NASA's Great Observatories launched in August 2003. It is shown here going through final inspection by a Lockheed Martin technician. NASA photo.

Featured Observatory

Gamma-Ray Bursters: Chasing "Cosmic Monsters" with the Spitzer Space Telescope

By Michelle Thaller
Manager, SIRTF Education and Pubic Outreach Program
California Institute of Technology

As an astronomer working on NASA's Spitzer Space Telescope, discoveries are a regular part of my job. Spitzer sees the universe in infrared light – what people commonly think of as "heat light". The detectors and cameras orbiting on Spitzer are the most sensitive infrared instruments ever launched. Mankind has never looked at the universe in the infrared through a space telescope equipped with instrumentation as advanced as Spitzer's. So essentially, everywhere we point Spitzer, we make a discovery. It's as simple as that!

Throughout his first book, *Sidereus Nuncius* (in English, *The Starry Messenger*) Galileo wrote about the joy he derived from being the first person, ever, to observe the universe through a telescope. How incredible, he wondered, that there were thousands of new stars in the nighttime sky that could only be seen with optical aid. And like the scientists using the Spitzer Space Telescope, Galileo couldn't help but make discoveries with his comparatively crude instrument; new discoveries fell out of the sky and into his lap, so to speak. There are so many things in the universe that we are only now discovering because we finally have the right tools to see them, just like Galileo. And, probably just like Galileo, a few of our recent findings have us feeling a bit perplexed and even somewhat scared!

Most of the discoveries we make with Spitzer are fairly "routine", and I don't mean to disparage my fellow research scientists by writing that! For the most part, our data analysis from Spitzer follows a "process". It is well-known that astronomers like to work on their favorite research topics. Once a year, the Spitzer Science Center at Caltech issues a call for proposals. We ask the scientific community, "What should the telescope look at in the

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IYA2009 International Update

www.astronomy2009.org

By Pedro Russo
IYA2009 Secretariat

Cosmic Diary:

Greenwich 1894 article

Astronomy Now magazine has released an **article** about the Cosmic Diary sub-blog, Greenwich 1894.

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US IYA2009 Update

Cultural Astronomy Working Group Fosters Creative Outreach; Galileoscope For Sale!

By Douglas Isbell
US IYA2009 Single-Point-of-Contact

The US IYA2009 Cultural Astronomy and Storytelling Working Group led by Jarita Holbrook from the University of Arizona is making good progress on a number of creative projects.

The core activity of the working group

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"From Earth to the Universe" (FETTU) Project Has Landed Around Globe

A worldwide exhibition of large-scale astronomical images which is being launched in over 40 countries, has opened in the United States under the banner of the International Year of Astronomy 2009 (IYA2009). The "From Earth to the Universe" (FETTU) project is designed to bring the undeniable beauty of astronomy to the general public in a series of free showings across the country, which have begun with a traveling image exhibit now open at Tucson International Airport in Arizona.

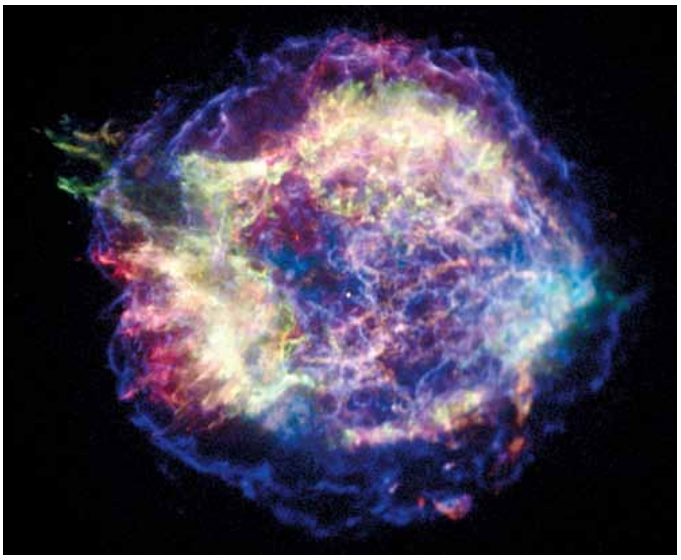
FETTU is a major project of both the US and global efforts for IYA2009. With images taken from both ground- and space-based telescopes, FETTU showcases the incredible variety of astronomical objects that are known to exist - planets, comets, stars, nebulae, galaxies, clusters, and more. The exhibit also shows how some of these objects look different when viewed across the electromagnetic spectrum, from the ultraviolet and visible light to infrared, X-rays and gamma rays.

FETTU is being shown in non-traditional public venues such as parks and gardens, shopping malls, metro stations and airports in major cities across the world. The FETTU images have been selected for their stunning beauty to engage members of the general public who might normally ignore or avoid astronomy. With short, but informative captions on each panel, the goal is introduce some basics of the science involved once an individual has been drawn to the images.

In the US, FETTU is being sponsored by NASA and will appear in semi- permanent installations in Atlanta and Chicago later this spring. The traveling version of FETTU, with its first stop in Tucson, will then move to Memphis in April. More FETTU locations are being planned across the US and an enhanced schedule is being developed.

Several editions of FETTU will also be appearing in the San Francisco Bay Area beginning in May. The program's funding is provided by NASA's Lunar Science Institute, the Fermi and Swift missions through Sonoma State University, and several other organizations. Also, the NASA IYA Student Ambassador program is facilitating a FETTU exhibit in Madison, Wisconsin.

With NASA support, FETTU panels for the visually impaired are being prepared. The caption material for all of the images in the US collection of 50 images is available in both English and Spanish.



CASSIOPEIA A: 11,000 light-years. Galaxy, believed to be the leftovers of a massive star that exploded over 300 years ago. The material ejected during the supernova smashed into the surrounding gas and dust at about 16 million kilometres per hour. This collision superheated the debris field to millions of degrees, causing it to glow brightly in X-rays as seen here by the Chandra X-ray Observatory. Credit: Chandra, NASA / CXC / MIT / UMass Amherst / M.D. Stage et al.

FETTU in Tucson, Arizona. Photo by Doug Isbell (ASP)

"It's very rewarding to see FETTU taking shape across in the United States thanks, in large part, to NASA," said Kim Kowal Arcand of the Chandra X-ray Center and principal investigator for the NASA FETTU grant. "It's also amazing to see how it has taken off around the world."

With 2009 underway, FETTU is already being showcased in a variety of formats — both as physical installations and digital displays — in over 40 countries around the globe. These worldwide exhibits have been funded through a variety of local resources and are organized by each individual location. For a full list of known FETTU exhibits — both in the US and internationally — visit their website.

FETTU is one of 11 Global Cornerstone Projects being supported by the International Astronomical Union's IYA2009 efforts. To learn more about IYA2009 internationally, the cornerstone projects, and other activities please visit the IYA2009 website.

Additional information on the US plans and programs for IYA can be found here.

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April's Featured IYA Theme:

Galaxies and the Distant Universe

By Vivian White
Astronomical Society of the Pacific

When Galileo first recorded his telescopic observations of the heavens, he started humanity down the road to a greater understanding about the structure of our universe. In the last 400 years we he have gained tremendous insight into the sizes and distances of the planets in our solar system, the nature of stars in our galaxy, and the structure and evolution of the galaxies in our universe.

Yet, many people remain unclear about the differences in size and structure between our solar system, the Milky Way galaxy, and the universe in general. Let's try to clear up some misconceptions. We'll start with something small (astronomically speaking).

Our solar system consists of one star, the Sun, and eight orbiting planets, along with numerous moons, asteroids, dwarf planets, comets, rocks and dust.

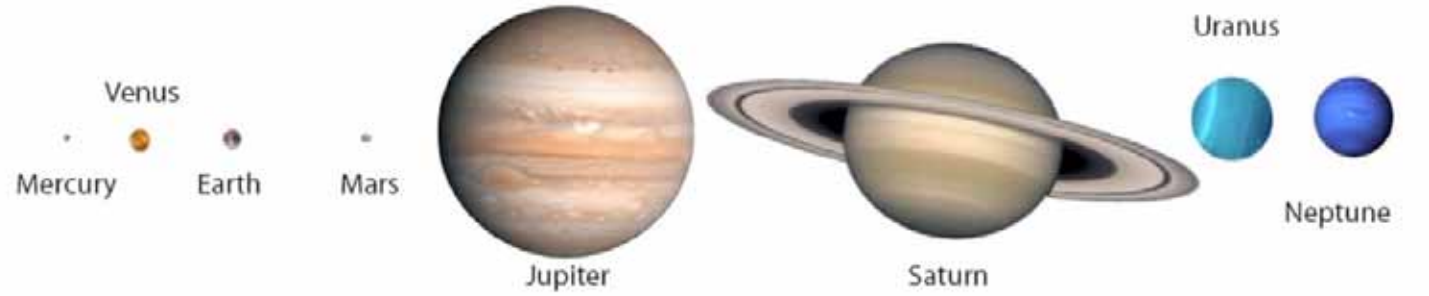
Our Sun is just one star among billions of stars in our Milky Way galaxy. If we shrink the Sun down to a size that is smaller than a grain of sand, our entire solar system would be small enough to fit in the palm of your hand. The diagram at the left is about the correct size for this analogy.

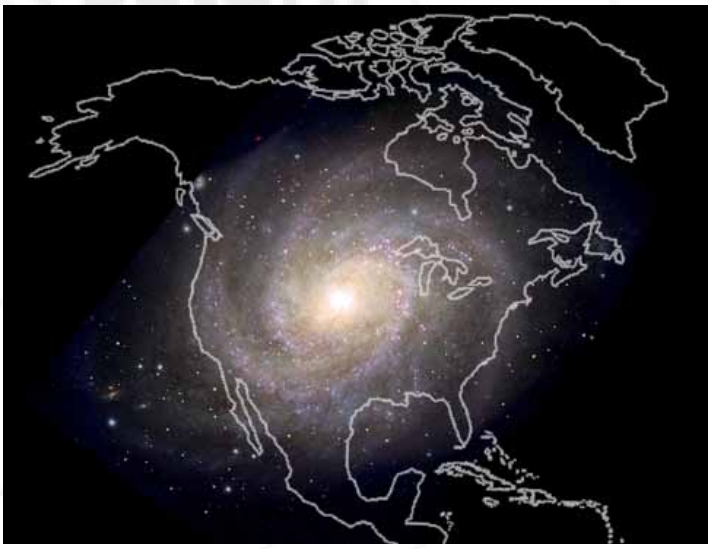
On this scale, and with the solar system resting in your hand, the Milky Way galaxy, with its 200 billion stars, would span the width and breadth of the North American continent (see the illustration on the right). Galaxies come in many sizes. The Milky Way is big, but some galaxies, like the Great Andromeda galaxy about 2 million light years from us, are much larger.

The universe is the biggest structure of all and contains billions of galaxies! NASA's space telescopes have allowed us to explore the most distant reaches of the observable universe. The **Hubble Space Telescope** made the deepest image of the universe called the **Hubble Ultra Deep Field**. In the next decade, NASA hopes that Hubble's successor, the **James Webb Space Telescope**, will explore the most distant edge of the universe, and help astronomers to better understand how galaxies form and evolve.

Visualize our universe full of galaxies with this month's **IYA Discovery Guide**, and learn more about our universe from **NASA**.

The eight planets of our solar system shown to scale.





As an example of size and scale in our universe, if our solar system was reduced to the size of the human palm, the Milky Way galaxy would span the entire North American continent.

400 Years of the Telescope: A Journey of Science Technology and Thought debuts on the PBS television network beginning Friday, April 10, 2009 on many PBS stations. Broadcasts will continue throughout April and May. Click **here** to find dates and times in your area by ZIP code.

The IYA2009 Galileoscope is now available

The Galileoscope — a high quality, easy-to-assemble and easy-to-use telescope at an unprecedentedly low price — is now available to order. A Cornerstone project of the International Year of Astronomy 2009, the Galileoscope was developed by a team of leading astronomers, optical engineers and science educators to make the wonders of the night sky more accessible to everyone. Orders can now be placed here for delivery beginning in late April.

By encouraging the experience of personally seeing celestial objects, the Galileoscope project aims to facilitate a main goal of IYA2009: promoting widespread access to new knowledge and observing opportunities. Observing through a telescope for the first time is an experience that shapes our view of the sky and the Universe. It prompts people to think about the importance of astronomy, and for many it's a life-changing experience.

Galileoscope model. Photo by Stephen M. Pompea and Richard Tresch Fienberg. www.galileoscope.org

Galileoscopes will open up a whole new world for their users and are an excellent means of pursuing an interest in astronomy during IYA2009 and beyond.

Galileoscopes are available at the incredibly low price of US$15 per kit. Discounts are available for group purchases of 100 or more, bringing the price down even lower, to US$12.50 each, reducing costs for schools, colleges, astronomical societies, or even parties of interested individuals. Never before has such a high quality and professionally endorsed scientific instrument been available for this price.

To further this aim, the Galileoscope Cornerstone project has initiated the "Give a Galileoscope" program. Participants may buy Galileoscopes for themselves, their families, or their friends at the regular $15 or $12.50 price (depending on quantity) plus shipping, and/or donate as many telescopes as they'd like for $12.50 each, with no shipping charges. Donated Galileoscopes will go to less advantaged schools and other organizations worldwide, especially in developing countries and helpt o bring a modern education to students in poor schools empowering them to pursue increased knowledge about science and technology. Donating Galileoscopes increases the project's global impact and gives people who might otherwise never have the opportunity to look through a telescope the chance to join millions of skywatchers worldwide in a shared experience of astronomical discovery.

The Galileoscope is named after the Italian astronomer Galileo Galilei, who first observed the heavens through a telescope 400 years ago. His observations were nothing short of revolutionary and changed our view of the world forever. The Galileoscope is optimized to provide views of the very same objects that inspired Galileo all those years ago — including craters and mountains on the Moon, the rings of Saturn, the phases of Venus, a variety of star clusters, and moons orbiting the planet Jupiter. Sights such as these astounded Galileo and they are all visible, along with countless other objects, through the Galileoscope. Although, with its 21st-century optics, the Galileoscope will provide a much better observing experience than Galileo had!

Galileoscopes are also invaluable educational tools which will also help in teaching related subjects such as mathematics, physics, history and philosophy. As practical instruments they can be used to demonstrate basic optical theory in a real-world scenario, a technique often praised by educators and pupils themselves. Free educational guides are available on the project's website, providing further information to teachers, students and enthusiasts. Experience has shown that the "Wow!"-factor that kids get from assembling their very own fully functional, high quality Galileoscope is unsurpassed.

"The ability to experiment with lenses while building the telescope offers a much more powerful learning experience than receiving a preassembled telescope," says Rick Fienberg, Editor Emeritus of Sky & Telescope magazine and Chair of the IYA2009 Cornerstone project. "Users will learn many aspects of optics and even have a chance to construct two types of telescopes — a modern one and a more primitive one similar to Galileo's," adds Stephen Pompea, US IYA2009 Project Director and member of the IYA2009 Cornerstone project. "Building and using a Galileoscope gives kids the feeling that science is fun."

Galileoscopes are easy to use, sturdy, reliable and well-designed windows to the Universe. Orders are now being taken through the official website, www.galileoscope.org. Build one and the stars will be within your reach!

Worldwide observing projects with small telescopes are a key part of the Galileoscope Cornerstone. The "You Are Galileo!" project, organized by the IYA2009 Japan National Committee, uses classroom telescopes along with worksheets and manuals to form part of a year-long observation program. These are designed for children and certificates are available for participants who send records of their observations to the "You Are Galileo!" team. Visit this link for more information.

The Galileoscope is a high quality 50-mm

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Galileoscope continued from page 4

f/10 telescope, with a glass doublet achromatic objective. A 20-mm Plössl-like eyepiece with twin plastic doublet achromatic lenses gives a magnification of 25x across a 1.5-degree field, and a 2x Barlow lens (also a plastic doublet achromat) gives a magnification of 50x. The Barlow lens can also be used as a Galilean eyepiece to give a magnification of 17x and a very narrow field of view to simulate the "Galileo experience". The standard 1.25-inch focuser accepts commercial accessories, and the standard 1/4-20 tripod adapter works with any standard photo tripod (not included).

Simulated views of the Moon at 50x, the Pleiades ("Seven Sisters") star cluster at 25x, and Jupiter and its moons at 50x in the Galileoscope. Made with Starry Night software, by Imaginova, Inc., and additional images by R.T. Fienberg.

In addition to the IAU, UNESCO, the IYA2009 Global Sponsors and the IYA2009 Organisational Associates, principal sponsors of the Galileoscope project include the American Astronomical Society, the National Optical Astronomy Observatory, the National Science Foundation, the Astronomical Society of the Pacific, Carthage College, Merit Models, Photon Engineering, Sky & Telescope, and Galileo's Place, home of Galileo-brand telescopes.

IYA2009 marks the 400th anniversary of Galileo Galilei's first astronomical observations through a telescope. It is a worldwide celebration, promoting astronomy and its contribution to society and culture, with events at regional, national, and global levels.

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Related video is available **here**.

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is to create five films of varying lengths that focus on the science and culture of astronomy as a film form of storytelling. As part of this, "Hubble's Diverse Universe" has been funded by a NASA E/PO grant. Filming has been completed and the group is currently editing the footage. The goal is to have the 45- minute documentary completed by April. The trailer can be viewed **here**.

The Cultural Astronomy Summer School, led by team member Tom Hockey, has been approved by the American Astronomical Society (AAS) as a pre-meeting event for its June 2009 meeting in Pasadena, California. The school has been funded by the Historical Astronomy Division of the AAS. Students planning to attend pay a $50 registration fee and their own travel and lodging. Further details, including a poster for the summer school, can be found **here**. This is an official IYA2009 USA Cultural Astronomy and Storytelling Working Group event.

To reach new audiences, the group is working with Tom Fleming from the University of Arizona Steward Observatory to do daytime telescope viewing at the Tanque Verde Swap Meet, which reaches the very large Mexican-American community in South Tucson. The group is also reaching out to the Tucson Indian Center in downtown Tucson and the recent refugee resettlement community.

"Our storytellers have been busy!" Jarita reports. "Our storytelling events combine storytelling with telescope viewing of three bodies: The Sun, The Moon, and Venus. Our Barnes & Noble events reached over 100 people. On the East coast, our Maryland storyteller has been teaming with a Galileo impersonator and astronomers to do events at K-12 schools and at Space Telescope Science Institute. She is scheduled to visit several more schools in the coming months. Our other East Coast storyteller is learning how to create podcasts of celestial storytelling at various storytelling festivals this year."

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Artist's view of the Spitzer Space Telescope in orbit with the infrared Milky Way galaxy in the background. NASA image.

coming year?" With a space telescope that is far away from Earth's cycles of day and night, almost every second of time can be productively used. Proposals are submitted and reviewed by a group of independent astronomers. And even those of us physically here at Caltech working for Spitzer must submit our research ideas through this external review panel. Once all the proposals are submitted and reviewed, plans are laid for Spitzer's observing schedule. Scientists around the world request observations of star-forming nebulae, distant active galaxies, or newly-found planets around nearby stars. Everything is neatly filed away into databases that plan Spitzer's motions for many months in the future.

In March 2008, however, something happened, far out in space, which threw our entire planning schedule into disarray. Colleagues of mine drove into work late one night to access the computers holding those neatly organized planning schedules I just mentioned. They ordered the telescope to stop everything it was doing. From far across the universe, echoes of the most violent explosion ever seen had just reached Earth, and every major telescope in the world was instructed to stand down and watch the show. At 2:12 am (EDT) on March 19, 2008, a tiny flash of light appeared that actually would have been visible to the unaided eye for anyone looking in the right part of the sky. At the same moment, the Swift X-ray Telescope (XRT) on board NASA's Swift satellite registered a sharp burst of high-energy radiation coming from the exact same spot in the sky. The very first naked-eye "gamma-ray burster" had been observed.

Like the new stars that Galileo saw through his telescope, gamma-ray bursters have only just recently made their presence known to man. The name says it all; when first observed, they appeared to us as just bursts of gamma-rays from some random direction in the sky, lasting only a few seconds. Like so many of the most dramatic discoveries, they were detected by complete accident. In the late 1960's a series of satellites were launched to detect nuclear weapons tests in other countries. The Vela satellites looked for gamma rays, a super-high-energy kind of light created by nuclear explosions; specifically by thermonuclear, or hydrogen, bombs. Gamma rays occur very rarely in nature, because in order to give off this kind of radiation, the source needs to have a temperature over one billion degrees. As the Vela satellites scanned the Earth for very high temperature explosions, they detected about two to three gamma ray "pops" a day that couldn't be traced to nuclear tests on Earth. How so? The reason was simple: the Vela-observed gamma rays were coming from the wrong direction. The source was "up in space" not down on the Earth. Government scientists and others didn't give the observations much thought for some time (and thankfully, no one seemed to be worried about nuclear tests being conducted by aliens!), until a few astronomers decided to take a closer look at these events.

A burst of gamma rays alone doesn't tell us much. It is true that whatever creates this type of electromagnetic radiation must be very energetic to reach temperatures of billions of degrees. And, at the outset of their analysis that was pretty much all astronomers could conclude. After some time, though, they got a break in the case. In the mid 1990's two orbiting observatories, the Compton Gamma-Ray Observatory and Beppo-Sax were both scanning the sky for a good, strong gamma-ray burster. On January 23, 1999, one went off and the orbiting observatories sent out a call to anyone or anything on Earth that would listen. An automated array of small telescopes in New Mexico called ROTSE-1 (Robotic Optical Transient Search Experiment) was able to observe the burster just 25 seconds after it had been detected. Within four hours the Palomar 200-inch telescope observed visible light from the same explosion. This was followed by observations with the Keck Telescopes in Hawaii, the largest optical telescopes in the world at the time. For about a day after the first observation, a dim afterglow remained that the giant telescopes were able to follow and analyze. With real visible light to work with, astronomers were able to analyze the spectrum of the glowing region, and measure its redshift.

Examining the redshift of any spectrum is a powerful scientific tool for astronomers. A measurement of the distance light has traveled through the expanding universe, redshift is the only way astronomers have to estimate distances once we reach the

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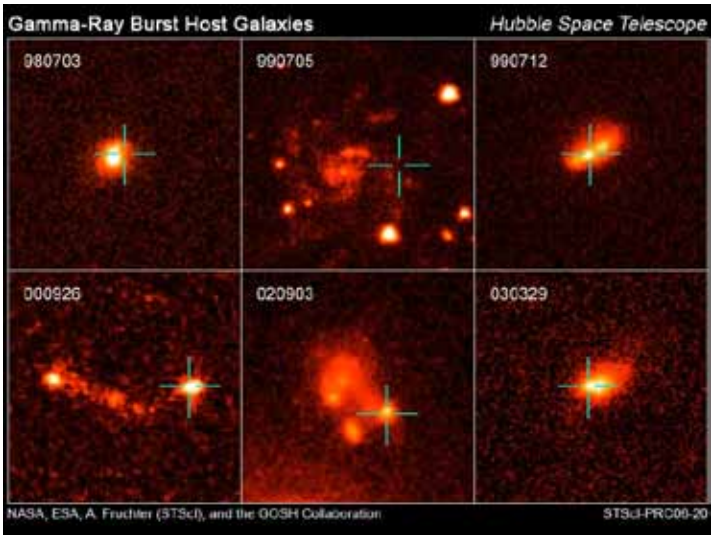
Spitzer *continued from page 6*

realm of faraway galaxies. The expansion of space causes light to lose energy – called "reddening" in astrophysical terminology.



A small sampling from the Hubble Space Telescope of gamma ray bursters captured in other galaxies.

A wave of light might start out travelling as an X-ray (a very high energy form of electromagnetic radiation) in a distant galaxy. By the time the X-Ray reaches us, it's been "reddened" into a less energetic kind of light, such as ultraviolet or even visible light. When astronomers finally measured the redshift of the gamma-ray burster afterglow, they scratched their heads and went back to their computers, believing that they'd made a mistake. The implications were simply unbelievable. Their measurement suggested that the afterglow was from billions of light years away. But that result turned out to be very real.

Astronomers were hooked. They had seen the most violent event, the most dangerous "cosmic monster", ever observed. And, in true scientific fashion, scientists scrambled to come up with an explanation of what kind of beast could possibly produce that much energy. They also wanted to determine if there was a chance of it happening close to Earth's neighborhood. Numbers suggest that the only event capable of packing that much punch is the creation of a massive black hole from the collision of two neutron stars or from the collapse of a very massive, rapidly rotating star (recently termed a collapsar). Astronomers have coined the term "hypernova" (as opposed to a garden-variety supernova) which up to now has held the title of the most violent explosion in the universe.

Astronomers are hungry to know more about gamma-ray bursters, so Spitzer has had a special override protocol built into its scheduling software to accommodate these rare events. Because of this modification, when the March 2008 gamma-ray burster was detected, Spitzer was able to "swing around" to observe it in a matter of hours. Working in tandem, astronomers at observatories around the world coaxed a redshift out of their data and determined that we had literally seen with our eyes an event 7.5 billion light years from Earth. What is the intrinsic brightness of an object physically seen to explode from that far away? In astronomical terms, when the progenitor of the March 2008 gamma-ray burster exploded, it emitted the combined light of 1,000,000,000,000,000,000,000 (one sextillion) stars like our Sun, the same amount of light emitted by ten billion galaxies. All of its energy was emitted at once, in the space of a few seconds of time. In reality, the explosion was brighter than the combined light, and emitted the combined energy, of the entire rest of the known universe. And, it produced conditions unseen since the Big Bang. As human inhabitants of the Milky Way galaxy, it's also worth pondering that we observed an exploding star that might have blown away an entire solar system and, probably, a large chunk of its galaxy. How many billions of creatures died in that blast, some seven-and-a-half billion years ago? The event taught us that gamma ray bursters are a real threat for humans on Earth; some scientists have theorized that mass-extinctions in Earth's history might have been caused by gamma-ray bursters bombarding our planet with lethal radiation. Now that we know what's lurking out there, we really want to understand these monsters better.

Gamma-ray busters were entirely invisible to us before we started using highly specialized telescopes that can observe our surrounding cosmic environment in different wavelengths of light. Who knew these titanic explosions, which happen all around us in light our eyes can't see, could be so potentially hazardous to life on Earth? We now observe gamma-ray bursts (although rarely as powerful as the March 2008 event) every few days. As I have pondered these peculiar cosmic events, I think back to how Galileo, through careful observation and analysis with simple optical aid, endured persecution in helping to ascertain that man is not physically located in the center of the universe. In the true Galilean tradition, our recent detection and examination of Gamma-ray bursters provides another prime example of a discovery that human senses alone could never have achieved. As astronomers, scientists and living beings of the cosmos, we continue on a great journey of discovery, begun four centuries ago, to uncover all that is beautiful, wonderful, intriguing, and potentially dangerous in our universe.

The "afterglow" of the March 19, 2008 gamma ray burst imaged by the Swift X-ray Telescope (left) and the Optical/Ultraviolet Telescope (right). This was the brightest gamma ray burst ever seen. NASA/Swift/Stefan Immler and others.

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Two Small Pieces of Glass

More information is available about traditional and full-dome shows.

Cosmic Diary on CSSBased.com

The Cosmic Diary website has been featured on CSSBased, a project providing web designers with a gallery of well-designed CSS-based websites from all around the world.

First Dark Sky Discovery Sites Announced in Scotland

To celebrate the International Year of Astronomy 2009, the world's first Dark Sky Discovery Sites were unveiled yesterday at Newbattle Abbey College in Dalkeith.

Galileoscope Update

As announced last month by the IYA2009 Secretariat, orders for the Galileoscope are now being taken at www.galileoscope.org, and delivery of telescope kits will begin in late April. We've received many queries from SPoCs asking if they need to place a new order, or if the earlier pre-order will suffice. The answer is, YOU NEED TO PLACE A NEW ORDER NOW (if you haven't already done so); filling out the pre-order form was NOT the same as placing an actual order. To initiate a large order of 100+ kits, if you haven't already done so, please fill out the Request for Quotation form and send it by e-mail to freight@galileoscope.org.

New History/IYA2009 Video

Check out the new video!

International Year of Astronomy 2009 and St Patrick's Day

Astronomy was the theme for St Patrick's Day parades in all major cities of Ireland. In Dublin, this year's theme for the festival Parade was "The Sky's the Limit!". Over 675,000 people lined the Dublin streets and over six million were watched it live on RTE or through the Internet. The Cork Parade, announced by Blackrock Castle Observatory in conjunction with the International Year of Astronomy 2009 in all television, radio and press coverage, saw over 65,000 people celebrating the theme of 'Cosmic Chaos'.

Moon for all Mankind

The IYA2009 Malta Committee has established a new project aimed at encouraging different countries to work together, creating a mosaic image of the Moon.

StarPeace Update

The first newsletter of IYA2009 Special Project StarPeace is now available.

The World at Night Exhibitions on Six Continents

The World at Night exhibitions expand to six continents in March and April 2009.

Astronomy Photographer of the Year

The Royal Observatory of Greenwich is proud to present Astronomy Photographer of the Year 2009 - a new, free competition and exhibition for everyone who loves the night sky.

UNESCO Kalinga Prize for the Popularization of Science

The UNESCO Kalinga Prize for the Popularization of Science is an international distinction created by UNESCO in 1952 following a donation from Mr Bijoyanand Patnaik, Founder and President of the Kalinga Foundation Trust in India.

Who may apply • How to apply

2009 International Youth Camp on Astronomy and World Heritage

A Summer Camp is open to all nationalities and young students between 16 years and 20 years old who are interested in Astronomy and World Heritage.

Havana Planetarium and Science Center: International Partnerships for Astronomy Cooperation

This summer the Cuban Capital, Havana, will open a new planetarium and science center, the Centro Cultural de Ciencia y Tenologia "Rosa Elena Simeón".
The center is being built as part of the renovation of the Old Town of Havana (Habana Vieja) declared Human Cultural Heritage by UNESCO.

News round-up

The latest summary of IYA2009 stories making the headlines is now out.

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400 Years of the Telescope companion book now available from Interstellar Studios

Author Donald Goldsmith takes readers on a sweeping cosmic journey from the simple optical telescopes used by astronomers in centuries past to today's giant and technologically sophisticated instruments that study our universe in all parts of the electromagnetic spectrum on Earth and in space. He explains how Galileo first pointed his "instrument" toward the heavens, making the observations that eventually verified the Copernican hypothesis which placed the sun, instead of the Earth, at our solar system's center. The book interweaves four centuries of scientific history, intellectual advancements, and technological triumphs to explain how mankind's understanding of the universe has evolved dramatically each time that astronomers create larger and more powerful telescopes to point toward the heavens. 122 pages, softcover, $14.95 plus $3.50 shipping in the US. International shipping quoted on request. Call 530-343-5635 to order or email dan@interstellarstudios.com.

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This effort includes family nights at the National Air & Space Museum in Washington that will feature information about IYA2009.

For more details on the working group's activities, or to get involved, contact Jarita at holbrook@u.arizona.edu.

Have You Ordered Your Galileoscope Yet?

The Galileoscope is a high-quality, low-cost telescope kit developed as a cornerstone project of the International Year of Astronomy 2009. For just $15 plus shipping, you get a 50-mm f/10 refractor that snaps together in less than five minutes and gives great views of the same celestial wonders that Galileo first glimpsed 400 years ago, and that still delight stargazers today. You'll be able to view lunar craters and mountains, Jupiter's moons, the phases of Venus, Saturn's rings, and the Pleiades and Beehive star clusters. The Galileoscope comes with a 25x eyepiece and 2x Barlow lens and incorporates features such as achromatic optics, stray-light rejection, and a 1.25-inch focuser normally found on telescopes costing at least ten times more. It attaches to any standard photo tripod (not included).

Accompanying the kit are educational materials based on active inquiry, cooperative learning, testing of ideas and predictions, and hands-on experimentation. You can download these free activity guides, and order small numbers of Galileoscopes with payment by credit card or PayPal, at www.galileoscope.org. Museums, schools, astronomy clubs, and other institutions wishing to place orders of 100 or more can get a discounted price of $12.50 per kit, save on shipping via freight service, and pay by purchase order. To initiate a large order of 100+ kits, simply fill out the Request for Quotation form.

GLOBE at Night has been featured in the news

National Geographic News

Astronomy Picture of the Day

Earth Science Picture of the Day

ASP IYA Event Update

Dr. Steven Beckwith

The Silicon Valley Astronomy Lecture by Dr. Stephen Beckwith from the University of California and held at Foothill College drew 850 people on Wednesday, March 4, 2009. Dr. Beckwith's talk was entitled "The Dawn of Creation: The First Two Billion Years." From his presentation attendees learned that the great islands of stars we call galaxies got their start in the first billion years after the beginning of time, the Big Bang. Dr. Beckwith explained further that the deep picture of the sky reveals thousands of these galaxies, each made up of billions of stars like the Sun. Modern instruments like the Hubble Space Telescope have made it possible to look back to a time when the universe looked very different that it does today. Dr. Beckwith discussed some of the deepest images of the universe ever taken and shares recent discoveries about the early days of the cosmos.

This year marks the 10th anniversary of the free public lectures by noted astronomers to a diverse public audience. The series is jointly sponsored by the Astronomical Society of the Pacific, the SETI Institute, NASA's Ames Research Center, and the Foothill College Astronomy Program. A number of past lectures are available as podcasts.

About the US IYA2009 Logo

US IYA2009 has created a logo specifically for national events and activities. (Please use the international logo for programs related to the major IYA cornerstone projects or other international ventures.) Please contact the US IYA program for permission for use. The US IYA project has also created a giant postcard (2.8 MB PDF) that summarizes the major themes and programs that are being developed.

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A Journey of Science, Technology & Thought

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