



Marshall Star, April 24, 2013 Edition

# MARSHALL STAR

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## Marshall Center Honored by Alabama Legislature; Director Scheuermann Meets with State Lawmakers

By Kenneth Kesner

Patrick Scheuermann, director of NASA's Marshall Space Flight Center, met with Alabama Gov. Robert Bentley, Lt. Gov. Kay Ivey and a number of other state leaders and legislators April 18 during events at the State Capitol honoring the Marshall Center for its achievements in space exploration and its significance to the state.

**Image right: Alabama Gov. Robert Bentley signs a proclamation declaring April 18, 2013, "NASA Day in Alabama." Looking on, from left, are Marshall Space Flight Center Director Patrick Scheuermann, astronauts Kathleen "Kate" Rubins and Jack Fischer, and State Sen. Bill Holtzclaw of Madison, who represents Madison and Limestone counties. (NASA/MSFC/Emmett Given)**



The governor signed a proclamation declaring it "NASA Day in Alabama," and Scheuermann accepted resolutions from lawmakers praising Marshall's contributions to Alabama's economy and history.

The Marshall Center team's shared history with Alabama includes putting the first American satellite and astronaut into

space, the first humans on the moon, the space shuttles, the Hubble Space Telescope, major elements of the International Space Station and much more, Scheuermann said during a luncheon with state leaders.

History will continue to be made, he added, as the Marshall Center helps expand research aboard the space station, supports the commercial space industry as it strives to transport crews and cargo to the station, prepares the James Webb Space Telescope to let us look even deeper into the universe, and leads development of the Space Launch System -- the most powerful rocket in history -- to carry explorers beyond Earth orbit for the first time in 40 years.



"Montgomery has always been a partner in our work," Scheuermann said. "I believe there are other opportunities for us to work with the community and the state in leveraging our resources in North Alabama to grow the aerospace presence and support some natural growth and synergies in advanced manufacturing, information technology and other areas."

***Image left: Monsi Roman, right, of the Marshall Center's Science & Technology Office, explains NASA exhibits -- including a model of the International Space Station -- to a visitor during activities for "NASA Day in Alabama" at the State Capitol on April 18.***

***Roman is the project manager for Exploration Life Support Systems at the Marshall Center. (NASA/MSFC/Emmett Given)***

He pointed out that Marshall has helped advance friction stir welding and commercialized the technology for stronger welds; has developed a high-strength, high-temperature, wear-resisting aluminum alloy that's going into Evinrude outboard motors; and is working to advance 3D printing technology to use a laser and metal powder to produce a variety of parts stronger and cheaper than conventional manufacturing.

"I think we also can be a resource for the growing EADS aerospace presence in Mobile," Scheuermann said.

Scheuermann also told how, since 2008, NASA has invested \$19 million in applied sciences research in the Gulf of Mexico as part of a five-state initiative to address coastal management issues and regional recovery efforts resulting from hurricanes. Eight researchers affiliated with the Marshall Center have been supporting projects.

The Marshall Center has a more than \$2 billion impact on the Alabama economy, he said. In 2011, the most recent study showed that impact to include \$37.5 million in taxes in Alabama and \$817 million in contracts in the state, with nearly a quarter of those going to small businesses.

**Image right: Marshall Space Flight Center Director Patrick Scheuermann, right, and Bobby Watkins, director of the Office of Strategic Analysis & Communications at Marshall, talk with State Sen. Greg Reed, left, of Jasper, in front of the RS-25 rocket engine on display at the Alabama State Capitol April 18 for "NASA Day in Alabama" activities. Four RS-25 engines will power the core stage of NASA'S Space Launch System, the most powerful rocket ever built. (NASA/MSFC/Emmett Given)**



During the series of events honoring the Marshall Center, exhibits were on display in the State House highlighting several technological and scientific achievements of Marshall engineers and researchers. An RS-25 engine, like those that will be used in the core stage of the Space Launch System, drew attention in front of the State Capitol.

Astronauts Jack Fischer, an Air Force lieutenant colonel, and Kathleen "Kate" Rubins, a biologist, accompanied Scheuermann in Montgomery. Both were selected in 2009 to become members of the 20th NASA astronaut class, and completed their candidate training in 2011.

*Kesner, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.*

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## Student Teams Send Rockets to the Skies at NASA 'Launchfest'

By Megan Davidson



It was rockets ready, set, soar April 21 at the 2012-13 NASA Student Launch Projects challenge.

**Image left: A team from Krueger School of Applied Technologies in San Antonio, Texas, show off their rocket April 19 at the Student Launch Projects rocket fair in Marshall Activities Building 4316. During the event, students talked with Marshall Center employees about the handcrafted rockets they designed, complete with working science or engineering payloads. (NASA/MSFC/Fred Deaton)**

More than 600 students, representing 56 middle schools, high schools, colleges and universities in 26 states, launched rockets of their own design -- complete with working science or engineering payloads -- at Bragg Farms in Toney, Ala.

The students vied to see whose rocket could come closest to the 1-mile altitude goal and safely return its onboard science or engineering payload to Earth.

***Image right: A rocket designed and built by Century College of White Bear Lake, Minn., soars off the launch pad April 21 at the 2012-13 NASA Student Launch Projects challenge. The rocket reached an altitude of 5,047 feet -- a little more than 200 feet shy of the 1-mile goal. (NASA/MSFC/Fred Deaton)***

Fifty-four teams took part, though six faced mechanical or technical issues and did not launch. Ten preliminary awards were presented. The grand prize -- \$5,000 from ATK

Aerospace Group of Magna, Utah -- will be awarded May 17 after final post-flight analysis and review are complete.



This year's preliminary awards included:

- Best Vehicle Design: The University of Louisville in Kentucky received the award for the most creative, innovative, safety-conscious rocket design.
- Best Payload Design: Vanderbilt University in Nashville, Tenn., won the award for the most creative and innovative payload experiment, emphasizing safety and scientific value.
- Best Web Design: The University of Louisville won the award for the best rocketry [website](#).
- Science Mission Directorate Payload Award: Tarleton State University of Stephenville, Texas, was honored for having the most creative and innovative payload design, while maximizing safety and science value.
- Project Review Award: Mississippi State University in Starkville was honored for delivering the best combination of written preliminary design, critical design and flight readiness reviews and formal presentations.
- Education Engagement Award: The University of Louisville won for best inspiring the study of rocketry and other space-related topics. The Student Launch Projects teams were challenged to focus on middle-school students or educators. The University of Louisville engaged more than 1,500 students in hands-on science, technology, engineering and math (STEM) topics, with more than 1,100 of those being middle school-aged.
- Closest to Altitude Award: The team from Alabama A&M University in Huntsville received the university-level award for coming closest to the specified 1-mile altitude goal. The rocket reached an altitude of 5,269 feet -- just 11 feet short of the mark.
- Peer Awards: All rocket teams submitted votes for peer awards in each division. The "Best-Looking Rocket" awards went to Lucy Rede Franco Middle School of Presidio, Texas, and the University of Nebraska in Lincoln. The "Best Team Spirit" prizes were awarded to Victory Christian Center of Charlotte, N.C., and Tarleton State University.



The final two university division awards -- "Rookie Team of the Year" and "Best Overall Team of the Year" -- will be presented after teams have submitted their post-launch review documentation and science or engineering payload reports, due May 7. NASA will pick the 2012-13 winner based on those final reports -- plus all the work teams did leading up to launch day.

***Image left: A group of excited -- and festive - - rocketeers from Lucy Rede Franco Middle School in Presidio, Texas, get ready to launch their payload at the 2012-13 NASA Student Launch Projects challenge. The team took home the peer award for best-looking rocket. (NASA/MSFC/Emmett Given)***

maintained websites to document the experience and reached more than 44,000 students at schools and organizations in their communities to share their enthusiasm for rocketry.

Thousands of viewers watched the event live via the streaming video service UStream. Archived launch-day coverage is available [here](#).

***Image right: Hundreds of spectators -- including Marshall Center Deputy Director Teresa Vanhooser, seated, and her husband, Mike Vanhooser, left -- kept their eyes to the skies and cheered on their favorite teams at the rocketry challenge. (NASA/MSFC/Emmett Given)***



The Marshall Center's Academic Affairs Office, part of the Office of Human Capital, managed the rocketry challenge. ATK provided corporate sponsorship. The National Association of Rocketry supported launch readiness reviews and range safety. Bragg Farms has hosted the launch challenge since 2008.

***Image left: A team from Alabama A&M University in Huntsville is all smiles after receiving the "Closest to Altitude" award for coming closest to the specified 1-mile altitude goal. The rocket reached an altitude of 5,269 feet -- just 11 feet short of the mark. (NASA/MSFC/Emmett Given)***

*Davidson, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.*



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## **Marshall Center to Host Its First NASA Social at Great Moonbuggy Race**

*By Shannon Ridinger*

NASA's Marshall Space Flight Center and the U.S. Space & Rocket Center will host a NASA Social during the 20th anniversary of the Great Moonbuggy Race April 25-27.

NASA Socials are informal meetings among people who avidly use social networking sites such as Twitter, Facebook and Google+. Participants of NASA Socials are allowed unique access to different activities and in turn share their experiences through social media. NASA Socials have been held at various field centers and this will be the first one Marshall has hosted.

"We are really excited to host Marshall's first NASA Social event during the Great Moonbuggy Race," said Jason Townsend, NASA's deputy social media manager. "In addition to seeing students solve the engineering challenges of the Moonbuggy Race, we'll also be able to have social media participants get an insiders' look at the important work Marshall does to support the past, present and future of space exploration."

The Great Moonbuggy Race honors the legacy of NASA's first Lunar Roving Vehicle, built for excursions on the moon's surface in 1971. High school and college students from across the globe design a two-person "moonbuggy" and compete to achieve the fastest vehicle assembly and race time. This year, more than 70 teams from various states and countries will be participating.

NASA Social participants will be intimately involved in the race and will have the opportunity meet U.S. Space & Rocket Center and Marshall Center officials. They also will tour Marshall and have the opportunity to participate in special Space Camp activities usually reserved for campers.

Users on all social networks are encouraged to use the hashtag #NASASocial to receive updates and information about the event from the perspective of the NASA Social participants. Followers can also stay informed through Twitter via [@SpaceCampUSA](#) and [@NASASocial](#) and via posts to [Facebook](#) and [Google+](#).

*Ridinger is a public affairs officer in the Office of Strategic Analysis & Communications.*

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## **May 1 SHE Day Combines Safety, Health, Environmental and Earth Day Observances**

*By Kenneth Kesner*

On May 1, NASA Marshall Space Flight Center team members can have informative fun while learning "The Best Things in Life are SHE!"

That's the theme for the center's 2013 Safety, Health and Environmental, or SHE, Day. The event combines traditional Earth Day activities with Safety and Health Day demonstrations and exhibits.

One of the goals is to encourage everyone working at the Marshall Center to not only participate in safety meetings and procedures, but to actively think about safety, health and environmental issues in new ways, said Sonya Dillard, an engineer in the Marshall Center's Industrial Safety Branch and coordinator of 2013 SHE Day.

"Our people are already involved in safe practices," she said. "We're trying to take them to the next level, to be engaged in safety, health and environmental awareness as they go about their work and lives."

This year's SHE Day activities will be from 8 a.m. to 2 p.m. in Buildings 4316 and 4315, the Marshall Activities Building and Wellness Center. Buses will run continuously beginning at 8 a.m. A schedule is available on the SHE Day website. SHE Day ends with optional safety meetings from 2:30-3:30 p.m. in employees' buildings.

Activities will kick off at 9:30 a.m. with a tree planting ceremony. There will also be a SHE "Jeopardy" tournament, food vendors offering "healthier choices" as well as ice cream, and many Safety, Health and Environmental booths and exhibits.

A 5K run will be sponsored by the MSFC Running Club. This year there also is a 1.5 mile walk, and organizers hope it will inspire participants to form a MSFC Walking Club, Dillard said. There will be self-defense, Zumba, yoga and other SHE classes, Wellness Center tours, massages, blood pressure checks and other activities.

SHE Day 2013 is a "stand-down" event: With the exception of mandatory services -- such as fire, security and cafeterias -- work is suspended so Marshall Center team members can participate. Employees are encouraged to wear comfortable clothing and shoes, Dillard said. Training credits also are available and details are listed in the SATERN catalog as "2013 SHE Day."

For more information, a schedule and to register for events, visit the Marshall Center Safety, Health and Environmental Web pages at: <https://safety.msfc.nasa.gov/sheday>

*Kesner, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.*

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## **Public Outreach and Education Activities Now Require NASA Headquarters Approval**

NASA Headquarters now must approve any Communications, Public Outreach and Education event/activity/product occurring or being produced through the end of this fiscal year (September 30, 2013), unless it has been declared exempt from the review and approval process. That guidance was issued in late March by the Chief of Staff David Radzanowski and Chief Financial Officer Beth Robinson. NASA Associate Administrator for Education Leland Melvin is the approver for Education, and Associate Administrator for Communications David Weaver is the approver for Public Outreach. Marshall Center issued a CAITS on March 25 that contains the guidance and an Activity Summary form to be used for approval requests. Additional guidance is available in an April 2 information CAITS containing additional Headquarters guidance and clarification.

The Headquarters-issued guidance states that approval is required for "all education and public outreach activities...this includes all public engagement and outreach events, programs, activities, and products developed and implemented by Headquarters, Mission Directorates, and Centers across the Agency, including all education and public outreach efforts conducted by programs and projects.

"The scope comprised activities intended to communicate, connect with, and engage a wide and diverse set of audiences to raise awareness and involvement in NASA, its goals, mission and programs, and to develop an appreciation for, exposure to, and involvement in STEM. Audiences include employees, partners, educators, students, and members of the general public."

"The purpose of this Agency review of education and public outreach is not to limit those activities but to ensure that we make the best use of the limited funding available to conduct them," said Bobby Watkins, director of the Office of Strategic Analysis & Communications, and Marshall Space Flight Center's member on the NASA Communications Coordinating Council.

What's covered includes programs, events and workshops; permanent and traveling exhibits, signage, and other materials; speeches, presentations, and appearances, with the exception of technical presentations by researchers at scientific and technical symposia; video and multimedia products in development (excludes operational sites); external and internal publications, with the exception of Scientific and Technical information as defined by NPD 2200.1B; any other activity whose goal is to reach out to external and internal stakeholders and the public concerning NASA, its programs, and activities.

There is a long list of exemptions to the approval process, including all local Speakers Bureau and speaking engagements (other speaking engagements require a waiver and are subject to Agency travel policies); Center Director speaking engagements; NASA Office of Legislative and Intergovernmental Affairs events and activities; existing websites; Visitor Center tours and operating hours should not be altered (planned Education and Public Outreach programs and events to be held at Visitor Centers will require approval); loans of existing traveling exhibits and artifacts requiring no personnel travel and/or support; mission announcements and media events and products; breaking news activities; responses to media inquiries; Earth Day events; Digital Learning Network activities currently scheduled; FIRST Robotics; Flight Projects — specifically ARISS, EarthKAM, Education Downlinks, Zero Robotics; Great Moonbuggy Race; Lunabotics Competition; Microgravity University activities currently scheduled; NASA Educational Technology Services (NETS); NASA Internships, Fellowships and Scholarships; NASA Museum Alliance; Science Engineering Mathematics Aerospace Academy (SEMAA); Student Launch Initiative/Undergraduate Student Launch Initiative; Summer of Innovation.

To obtain approval for all Education and Public Outreach activities — except those that are exempt from the process as stated above -- the Activity Summary should be filled out and sent to Dom Amatore and June Malone in CS20, Office of Strategic Analysis & Communications, unless if for Programs and Projects...those should be sent to their respective Mission Directorates. Organizations submitted their approval requests in response to a March 25 CAITS and submissions have been sent to NASA Headquarters, but activities can still be submitted if necessary.

All Agency policies and requirements for conference attendance and for domestic and international travel also apply to approved Education and Public Outreach activities. The Marshall Center Travel Office is requiring documentation that Education and Public Outreach activities have been approved and is including the Office of Strategic Analysis & Communications in the approval process for that travel.

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## **Marshall Center's First Project Planning and Control Handbook Now Available Online**

*By Kenneth Kesner*

After more than a year and a half of collaborative effort across NASA's Marshall Space Flight Center, a comprehensive "Project Planning and Control Handbook" is now available online.

The handbook is filled with procedures, how-to examples, subject matter experts and more in its 250-plus pages, according to Steve Newton, of the Performance & Capabilities Management Office, in the Office of Strategic Analysis & Communications. Newton worked with Cheryl Harrell, supervisor of the Performance and Capabilities office, and coordinated the compilation of the handbook, often simply referred to as "the Green Book."

"It's the '101' on how to do it at the Marshall Center," Newton said.

Project Planning & Control covers a broad spectrum of disciplines including work breakdown structure, scheduling, budgeting, configuration documentation management, procurement or acquisition strategy, performance assessment and more. "Basically, it's taking all those and then asking how do we assess the degree to which we are successfully executing our programs, projects and activities?" Newton said.

"The Green Book is just one of an integrated set of actions the Office of Strategic Analysis & Communications is leading to improve the center's program planning and control," said Robin Henderson, associate director of the Marshall Center. "The ultimate goal is to improve program and project execution."

The handbook -- the first at the Marshall Center -- is aimed primarily at program and project managers and the people who execute planning and control functions in organizations like the Space Launch System Program Office, the Flight Programs & Partnerships Office and the Science & Technology Office. Newton said engineering and mission support offices -- even those dealing with procurement and institutional services -- should also find it useful.

"It is applicable to most organizations at the center," he said. "PP&C is not something that should be hard. It's using logic and 'good sense' to be good stewards of taxpayers' dollars and making sure that we've established a good baseline; that we've established procedures and processes on how we evaluate our performance; and being sure we are executing and delivering on technical objectives within schedule and budget constraints."

"Those goals are more important than ever as we balance fiscal realities and our essential role in NASA's missions," said Bobby Watkins, director of the Office of Strategic Analysis & Communications. "The Project Planning and Control Handbook is another resource offices can use to enhance efficiency."

Newton pointed out that there is also an art to PP&C, and training can only take you so far. Experience and execution are also needed. As employees have retired or moved on to other jobs, the center was in danger of losing knowledge and mentors. So it was important, Newton said, to capture as much as possible in the handbook, which will evolve with periodic updates.

Overall, the Marshall Center PP&C Handbook is less about prescribing procedures than it is about educating and serving as a resource, Newton said. "We want it to be a legacy."

To access the handbook, go to the center's Multiprogram Document Management System at <https://masterlist.msfc.nasa.gov/mpdms/> and click on "Multiprogram/Project Common-Use Documentation." From the "Approved Document List" select MSFC-HDBK-3684, "Project Planning and Control Handbook," to view or download a copy of the PDF file.

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**Dr. Alan Stern to Present April 29 on New Horizons Mission**

*By Shannon Ridinger*

On April 29, Dr. Alan Stern, planetary scientist and principal investigator for the New Horizons mission, will speak on "New Horizons: Exploring the Frontier of Our Solar System" at the U.S. Space & Rocket Center's Davidson Center Digital Theater.

Stern has a long career in space missions and has been involved in many as the principal investigator. His current work at the Southwest Research Institute is for the New Horizons mission, the first scientific investigation to obtain a close look at Pluto and its moons.

Launched in 2006, NASA's New Horizons spacecraft is now more than 80 percent of the way from Earth to Pluto and is scheduled to fly by the icy planet and its moons in July 2015. The mission will cover approximately 3 billion miles by the time it reaches Pluto and has already been by Jupiter, receiving a gravity assist in 2007. It's only the fifth probe to traverse interplanetary space so far from the sun and will be the first to travel so far to reach a new planet for exploration.

This historic mission will help us understand the worlds on the edge of our solar system and help scientists like Stern find answers to basic questions about the surface properties, geology and atmosphere of planets we've never been able to reach.

Stern's presentation will begin at 5:30 p.m. It is free and open to the public.

*Ridinger is a public affairs officer in the Office of Strategic Analysis & Communications.*

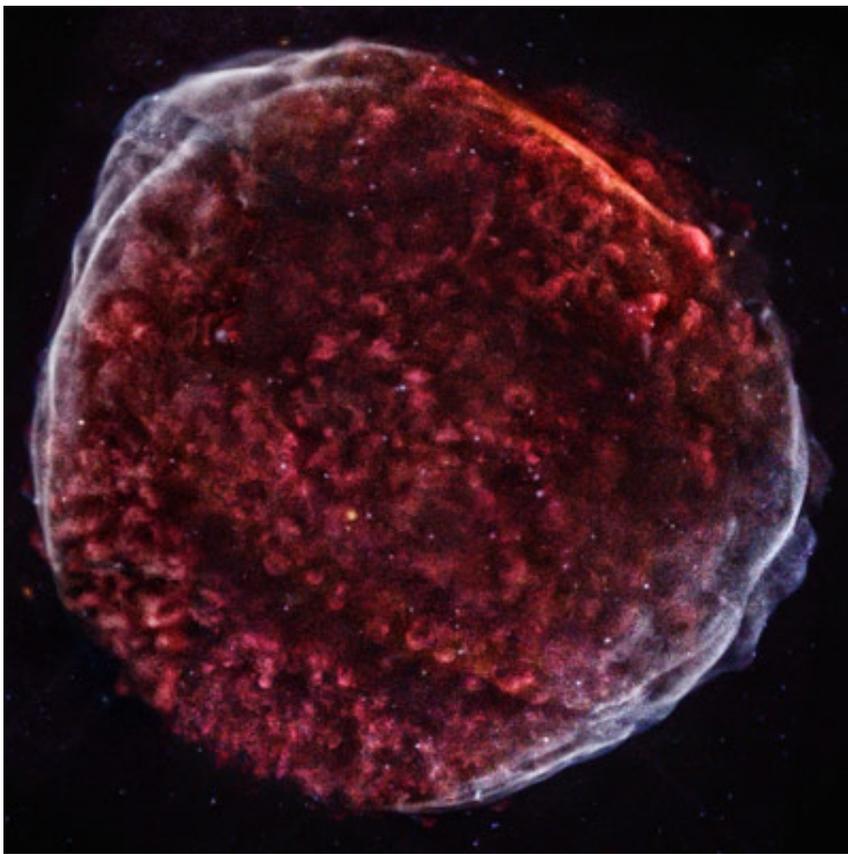
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Dr. Alan Stern will present on the New Horizons mission at the U.S. Space & Rocket Center's Davidson Center Digital Theater on April 29 at 5:30 p.m. (NASA)

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## **X-Ray View of a Thousand-Year-Old Cosmic Tapestry**



This year, astronomers around the world have been celebrating the 50th anniversary of X-ray astronomy. Few objects better illustrate the progress of the field in the past half-century than the supernova remnant known as SN 1006.

***Image left: In this new image of SN 1006, 10 different pointings of Chandra's field-of-view have been overlapped to show the debris field that was created when a white dwarf star exploded. (NASA/CXC/Middlebury College/F. Winklerch)***

When the object we now call SN 1006 first appeared on May 1, A.D. 1006, it was far brighter than Venus and visible during the daytime for weeks. Astronomers in China, Japan, Europe and the Arab world all documented this spectacular sight. With the advent of the Space Age in the 1960s, scientists were able to launch instruments and

detectors above Earth's atmosphere to observe the universe in wavelengths that are blocked from the ground, including X-rays. SN 1006 was one of the faintest X-ray sources detected by the first generation of X-ray satellites.

A new image of SN 1006 from NASA's Chandra X-ray Observatory reveals this supernova remnant in exquisite detail. By overlapping 10 different pointings of Chandra's field-of-view, astronomers have stitched together a cosmic tapestry of the debris field that was created when a white dwarf star exploded, sending its material hurtling into space. In this new Chandra image, low-, medium- and higher-energy X-rays are colored red, green and blue, respectively.

The new Chandra image provides new insight into the nature of SN1006, which is a so-called Type Ia supernova. This class of supernova is caused when a white dwarf pulls too much mass from a companion star and explodes, or when two white dwarfs merge and explode. Understanding Type Ia supernovas is especially important because astronomers use observations of these explosions in distant galaxies as mileposts to mark the expansion of the universe.

The new SN 1006 image represents the most spatially detailed map yet of the material ejected during a Type Ia supernova. By examining the different elements in the debris field -- such as silicon, oxygen and magnesium -- the researchers may be able to piece together how the star looked before it exploded and the order that the layers of the star were ejected, and constrain theoretical models for the explosion.

Scientists are also able to study just how fast specific knots of material are moving away from the original explosion. The fastest knots are moving outward at almost 11 million mph, while those in other areas are moving at a more leisurely 7 million mph. SN 1006 is located about 7,000 light years from Earth. The new Chandra image of SN 1006 contains over eight days worth of observing time by the telescope. These results were presented at a meeting of the High Energy Astrophysics Division of the American Astronomical Society in Monterey, Calif.

NASA's Marshall Space Flight Center manages the Chandra program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory controls Chandra's science and flight operations from Cambridge, Mass.

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