

NASA Briefs

Astronomers detect background glow

Astronomers have assembled the first definitive detection of a background infrared glow across the sky produced by dust warmed by all the stars that have existed since the beginning of time. For scientists, the discovery of this "fossil radiation" is akin to turning out all the lights in a bedroom only to find the walls, floor and ceiling aglow with an eerie luminescence. The telltale infrared radiation puts a limit on the total amount of energy released by all the stars in the universe. Astronomers say this will greatly improve development of models explaining how stars and galaxies were born and evolved after the Big Bang. The discovery reveals a surprisingly large amount of starlight in the universe that cannot be seen directly by today's optical telescopes, perhaps due to stars being hidden in dust, or being too faint or far away to be seen. The discovery culminates several years of meticulous data analysis from the Diffuse Infrared Background Experiment aboard NASA's Cosmic Background Explorer, which was launched in 1989.

Galileo begins extended mission

NASA's Galileo spacecraft made its closest-ever flyby of Jupiter's icy moon Europa on Dec. 16, marking the start of an extended mission that will focus on new and tantalizing scientific questions raised by its just-completed, highly successful two-year primary mission. "Galileo has earned a place in history as the first mission to orbit an outer planet," said Dr. Wesley Huntress, NASA's associate administrator for space science. "Galileo already has returned a wealth of new information in its two-year scientific exploration of Jupiter's atmosphere and system of moons. But the best yet may still be ahead of us." Galileo dipped over Europa at an altitude of only 124 miles with the signal received on Earth at 6:49 a.m. JSC time. This was the first encounter of the Galileo Europa mission, which began formally on Dec. 8, following the end of Galileo's primary mission and will study Jupiter's icy satellite in detail in hopes of shedding more light on the intriguing prospect that liquid oceans may lie under Europa's ice crust.

Hubble witnesses end of star's career

The end of a sun-like star's life was once thought to be simple: the star gracefully casting off a shell of glowing gas and then settling into a long retirement as a burned-out white dwarf. Now, a dazzling collection of detailed views released by several teams of astronomers using NASA's Hubble Space Telescope reveals surprisingly intricate glowing patterns spun into space by aging stars: pinwheels, lawn sprinkler style jets, elegant goblet shapes, and some that look like rocket exhaust. "These eerie fireworks offer a preview of the final stage of our own Sun's life," says Bruce Balick of the University of Washington, Seattle. More than simply a stellar "light-show," these outbursts provide a way for heavier elements—predominantly carbon—cooked in the star's core, to be ejected into interstellar space as raw material for successive generations of stars, planets and, potentially life. Details are at: <http://oposite.stsci.edu/pub/info/Latest.html>

Rodeo riders to 'clip clop' through JSC

For the third year in a row, JSC is sponsoring a number of "Rodeo Liff" activities in cooperation with the Houston Livestock Show and Rodeo and the local NASA/Clear Creek/Friendswood Go Texan Association.

Representatives from the Houston Livestock Show and Rodeo Speakers Bureau will make presentations at the Bldg. 3 cafeteria during

lunch on Jan. 30 and Feb. 6, as well as providing clowns and a small animal demonstration at the JSC Child Care Center. Employees who are horse riders and want to join the JSC Circle Riders on Feb. 10 may call Rose Gardner at x30331.

The Texas Independence Trail Ride, a group of about 150 horses and riders plus 10 wagons will enter JSC on Feb. 10, where they will be

met by the JSC Circle Riders, a group of JSC employees who ride horses. This combined group will conduct a trail ride through the center and stop at the Gilruth Center.

The highlight of this year's event will be an overnight camp-out near the Gilruth Center by the Texas Independence Trail Riders.

The local Go Texan committee is hosting a dinner dance the evening

of Feb. 10 in the Gilruth Center ballroom beginning at 7 p.m. All JSC employees are invited to attend. Tickets are \$15 and include a catered dinner by Sonny's Crazy Cajun Steak House. Proceeds will go to the scholarship program of the Houston Livestock Show and Rodeo. Call Nancy Goldstein at (713) 888-3026 for more information and tickets to the dinner dance.



JSC Photo by Robert Markowitz

OFFICIAL VISIT—Isao Uchida, president of the Japanese Space Agency, NASDA, gets an up-close look at flight simulation equipment in Bldg. 5 during a visit to JSC on Dec. 8. Uchida was accompanied by Astronaut Koichi Wakata and facility manager Charlie Spencer. Uchida also met with JSC Director George Abbey and received briefings on virtual reality, the AER-Cam free-flying robot camera spacecraft, and the X-38 vehicle and its development and test program.

Endeavour returns to flight line-up

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Endeavour's twelfth mission in space follows its last flight more than a year and a half ago on STS-77, which, coincidentally was the first and last mission on which Andy Thomas was a crew member. He has been training in Russia for a year as Wolf's backup, but never expected actually to fly on a long-duration mission.

That changed when space walk tasks were identified that required Wolf's participation rather than that of Wendy Lawrence, who could not fit safely in the Russian space walking suit. She flew on the last docking mission and also will fly on the last scheduled docking mission with Mir/STS-91—to bring Thomas home.

During the flight, the crew will deliver some 7,000 pounds of equipment and supplies to Mir and return experiment samples and equipment to Earth.

Wilcutt's third flight will be his first as commander. He piloted *Atlantis* on the STS-79 mission, which was the fourth to dock with Mir. That mission was the first to transfer American crew members John Blaha for Shannon Lucid.

Dunbar will fly for the fifth time on the shuttle. Her space flight experience includes the first ever shuttle docking with Mir on STS-71. She had trained prior to that flight as Dr. Norm Thagard's backup to be the first American on Mir. Edwards, Reilly and Sharipov are flying for the first time.

Powerful nearby jets provide clues to quasars

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Goddard. "At fairly regular intervals, the accretion disk is disrupted and a fast moving jet is produced."

"This jet is staggeringly more powerful than a geyser," added Swank. "Every half-hour, the black hole, in the constellation Aquila, throws off the mass equal to that of a 100 trillion ton asteroid at nearly the speed of light (approximately 650 million miles per hour). This process clearly requires a lot of energy—each cycle

is equivalent to six trillion times the annual energy consumption of the entire United States."

"What is even more amazing is that we are seeing the first clues to the source of matter ejected in the jets—the correlations we discovered indicate that the jet material must come from the inner disk. For years theorists have hypothesized that the jets come from somewhere close to the black hole, but no one had ever actually seen that direct link until

now," Eikenberry said.

Black holes are massive, with gravitational fields so intense that nothing near them, not even light, can escape. While this prevents anyone from observing black holes directly, their presence can be inferred from effects on nearby matter.

Many of the known or suspected black holes are orbiting a close "companion" star. The black hole's gravity pulls gas from the companion star into a swirling disk of material

which orbits around the black hole, much as soap suds swirl around a bathtub drain. As it falls into the black hole, the gas in the disk is compressed and heated to millions of degrees, emitting X-rays.

"This is like having a miniature quasar in your back yard; and, because it is much smaller, it changes over minutes and hours, rather than months and years. This will let us learn a lot in a much shorter period of time," Eikenberry said.

Rothenberg brings wealth of experience

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the success of the first servicing mission to the orbiting Hubble, correcting an optical flaw and restoring the telescope to full scientific capacity.

Diaz joined NASA as a cooperative education student at the Langley Research Center in 1964. He was actively involved in the Viking Project from 1969 to 1977 in a variety of roles. In 1979, he moved to NASA Headquarters and had a broad range of experience in the management of space science projects, including program management of the Ulysses and Galileo missions. Before moving to Goddard in 1996, he served as Deputy Associate Administrator for Space Science.



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Editor Kelly Humphries

New internal home page to speed Internet access

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and a short loading time are expected to reduce the time required to find what's needed.

The content of the rest of the page was designed with a clean, neat hierarchical approach that defines the intent of the new JSC Internal Home Page for 1998. The links are presented with originality, ranked by their impact or importance and they also are easy to use. The more hierarchical approach consists of five major categories: alerts, news and events, information, organizations and services.

"The previous JSC Internal Home Page that was released in

1995 had become a collection of lists. Hard to navigate and important items were not highly visible," said Chris Ortiz of the ISD Internet Group. Friske was tasked to "make it organized, simple, understandable, and easy to navigate."

At the same time the new internal page goes on-line, the external home page will get a minor facelift that synchronizes its graphics with the new internal page and give access to internal and external sites.

To access the new internal page, visit the external page at <http://www.jsc.nasa.gov> and click on "Employees," or go directly to <http://www4.jsc.nasa.gov>.