

# NewsLetter

Week of April 23, 2007

Vol. 8, No. 9

## An astonishing find

by Todd Hanson

After more than forty years of research in radio astronomy, one might think that the Universe's grand proportions would no longer astonish a veteran astronomer like Phil Kronberg. Wonderment, however, is not a state reserved for the young and Kronberg's recent discovery of a vast cloud of intergalactic plasma that stretches 6 million light years across leaves even him among the astonished.

The structures, discovered by Kronberg and colleagues Roland Kothes of the Dominion Radio Astrophysical Observatory in Penticton, British Columbia, and Christopher Salter and Phil Perillat of the Arecibo Observatory in Puerto Rico, had escaped detection on all previous radio-source sky surveys.

For Kronberg, who works in the Laboratory's Institute of Geophysics and Planetary Physics, and the investigators working with him, however, the detection of the Coma cloud is more than simply the discovery of a mind-boggling supergalactic structure. The diffuse cloud of radiation from high-energy particles might hold the key to understanding the enigmatic behavior of the ultra-high energy, extra-galactic cosmic rays that streak through our Universe and everything in it. In addition, the large area of radio glow they studied revealed "peep holes" through what is known as the Milky Way's foreground radiation, where the

cosmologically important cosmic microwave background radiation might be best studied by future space probes such as the NASA-ESA PLANCK Microwave Explorer.

The region that Kronberg calls "a particularly interesting region of diffuse radio glow," spans a vast, optically dark region of space near what astronomers call the "Great Wall" of galaxies. Discovered in 1989 by Harvard astronomers Margaret Geller and John Peter Huchra using Harvard-Smithsonian Center for Astrophysics Redshift Survey data at 300 million light years distance, the Great Wall of (optically visible) galaxies is the nearest large "supercluster" assembly of galaxies to the Milky Way and its constituent Earth.

The Coma cloud discovered by Kronberg and company extends from the Coma cluster of galaxies within the Great Wall across 6 to 9 million light years distance, or roughly 1 by 2 degrees in angle, which is several times the moon's area in the sky.

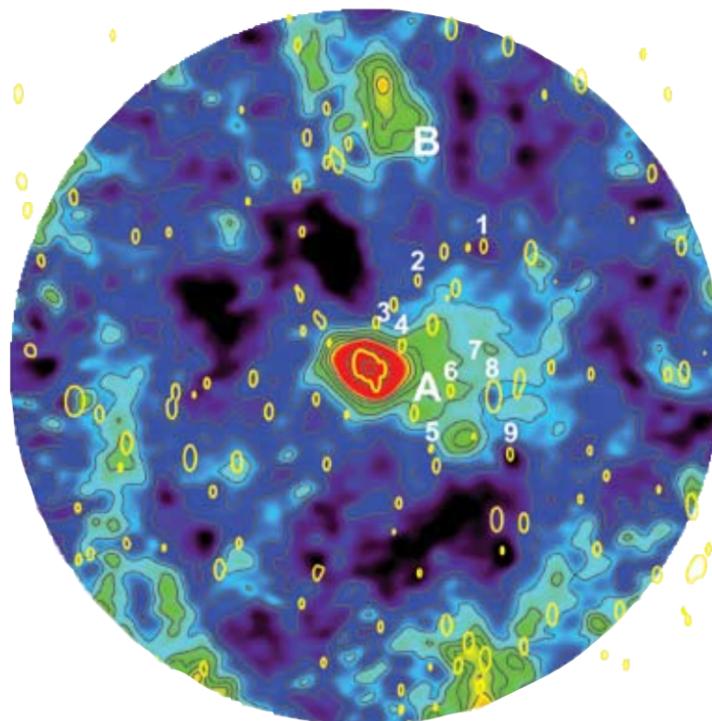
"It is truly unusual to have, within the same intergalactic space, so many (otherwise infrequent) radio galaxies within a relatively compact volume as we see near to Coma," says Kronberg. "The fact that

we find a prominent diffuse radio synchrotron glow at this location suggests that it represents the aggregate magnetic and cosmic-ray energy ejected from central galactic black holes at the nuclei of galaxies and deposited into intergalactic space over the course of their lifetime."

To create the Coma cloud image, the team used the 305-meter diameter Arecibo telescope to make a base scan of 50 square degrees of the Coma region of the sky. They then used the seven-antenna synthesis radio telescope at DRAO to make twenty-four separate observations, each lasting twelve hours, to add higher resolution data to the image. The angular resolution of the resulting image is comparable to that of a 1,000-meter diameter single dish radio telescope, if such a telescope were to exist.

The resulting combined image also provides an unprecedented view of faint, diffuse "radio cirrus" in the sky away from the Milky Way plane, thanks to the unique sensitivity of Arecibo. It also provides the first preview of small (arcminute-level) features

*continued on Page 3*



*This false color image shows the combined Arecibo/DRAO data sets for a 50-square-degree region of the sky near the Coma Cluster. The two patches of diffuse radiation that captured the team's interest are designated as A and B in the image. Yellow contours in the image indicate the brighter discrete radio sources that have been subtracted. The numbers 1 through 9 indicate the location of various radio galaxies in the image.* Graphic courtesy of Phil Kronberg, Institute of Geophysics and Planetary Physics


**NewsLetter**

P.O. Box 1663  
 Mail Stop C177  
 Los Alamos, NM 87545

Pre-sorted Standard  
 U.S. Postage Paid  
 Albuquerque, NM  
 Permit No. 532

LALP-07-001

## Workplace safety

Workplace safety depends on each worker taking responsibility for finding and reporting hazards. Following are some things to check around the work area:

- Is the area free of material that could cause someone to trip? Walkways and work areas should be free of stored materials, scrap, and other debris.
- Is the work area cleaned up regularly? Debris should be removed continually, or at least as each task ends.
- Is emergency equipment readily available? Keep an eye on fire extinguishers, emergency exits, and sprinklers to see that they are not blocked.
- Are cords and cables routed away from traffic areas? This is important to prevent tripping accidents and damage to equipment.
- Are personal heaters, coffee makers, microwave ovens, and other appliances properly plugged in and used?
- Is there sufficient space around personal heaters?
- Are common areas clean? Keep kitchen and food storage areas clean and food properly stored so as not to attract rodents and bugs?
- Are light fixtures maintained so there is adequate light to work safely and effectively? Burned out bulbs and tubes should be replaced promptly.
- Are hazardous materials correctly labeled and stored? Are the Material Safety Data Sheets easily accessible by workers and emergency personnel?
- Are tools and equipment maintained according to the manufacturer's instructions? Malfunctioning equipment and worn or damaged tools can cause serious accidents.
- Is ventilation equipment working properly to remove dust, fumes, and other respiratory hazards?
- Are all workers taking responsibility for conditions in the workplace? Watch for and report any hazardous conditions, so they can be corrected.



Two Los Alamos High School students extract DNA from strawberries. Strawberries are mashed with chemicals such as meat tenderizer and liquid soap and the liquid mixture is then poured through a piece of cheesecloth into a test tube where the DNA is extracted. Photo by Mike Kolb, Community Programs Office

## Los Alamos scientists take genome science to the streets

by Todd Hanson

Local middle-school and high-school students are learning about genome sequencing through hands-on activities sponsored by the Laboratory's Joint Genome Institute outreach team.

The Lab's team is part of the Department of Energy's Joint Genome Institute.

The team debuted its program March 14 at the Laboratory's Expanding Your Horizons Student Workshop at the University of New Mexico, Los Alamos campus with an activity that taught young women how to extract DNA from strawberries using dish soap and other household ingredients.

The first school presentation was March 20 with students from Pojoaque High School and the Victory Faith Christian Academy in Española. Last week, Los Alamos High School students learned about DNA and genome sequencing.

Each outreach presentation begins with a talk given by a genome sequencing expert. The talk is then followed by three hands-on activities for the students in DNA modeling, DNA extraction, and DNA sequencing and assembly. Students learn the fundamentals of genome science and about the work done at the JGI from the talk and exercises.

The team plans to expand the number of presentations and develop new demonstrations in coming months in order reach out to more schools and students and to help better educate the local communities about the kind and importance of research being conducted at the JGI facilities.

The JGI-LANL Outreach Team is composed of David Sims, Linda Meincke, Chris Munk, Lynne Goodwin, Cliff Han, Beverly Parson-Quintana, and Linda Sue Thompson of Genomic Sequencing and Computation Biology (B-5); and Karen Davenport, a science educator at the Bradbury Science Museum, part of the Laboratory's Community Programs Office (CPO).

The Joint Genome Institute was created by DOE in 1997 to unite the expertise and resources in genome mapping, DNA sequencing, technology development, and information sciences pioneered at the DOE genome centers at Los Alamos, Lawrence Berkeley, and Lawrence Livermore national laboratories.

## Los Alamos National Laboratory NewsLetter

The Los Alamos Newsletter, the Laboratory bi-weekly publication for employees and retirees, is published by the Communications Office in Communications and Government Affairs (CGA). The staff is located at 135 B Central Park Square and can be reached by e-mail at [newsbulletin@lanl.gov](mailto:newsbulletin@lanl.gov), by fax at 5-3910, by regular Lab mail at Mail Stop C177 or by calling the individual telephone numbers listed below. For change of address, call 7-3565. To adjust the number of copies received, call the mailroom at 7-4166.

### Editor:

Jacqueline Paris-Chitanvis, 5-7779

### Associate editor:

Steve Sandoval, 5-9206

### Production editor:

Denise Bjarke, 7-3565

### Graphic designer:

Edwin Vigil, 5-9205

Los Alamos National Laboratory is a multidisciplinary research institution engaged in strategic science on behalf of national security. The Laboratory is operated by a team composed of Bechtel National, the University of California, BWX Technologies and Washington Group International for the Department of Energy's National Nuclear Security Administration.

Los Alamos enhances national security by ensuring the safety and reliability of the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction, and solving problems related to energy, environment, infrastructure, health and global security concerns.



Printed on recycled paper.  
Please recycle.



# GRaND science instrument moves closer to launch from Cape

Dawn spacecraft carrying Los Alamos nuclear detector bound for beginning of solar system

by Nancy Ambrosiano

A mission back in time is nearing the launch pad minute by minute. The Dawn spacecraft, NASA's mission into the heart of the asteroid belt, is at Astrotech Space Operations in Titusville, Florida, for final processing and launch operations.

Dawn will next move 15 miles to the launch pad in early June, with the first launch opportunity in the early evening of June 30. The Dawn spacecraft will employ ion propulsion to explore two of the asteroid belt's most intriguing and dissimilar occupants—asteroid Vesta and the dwarf planet Ceres. The spacecraft, carrying among its instruments a Los Alamos device called GRaND, is set for an 8-year, 3.2-billion-mile odyssey into the heart of the asteroid belt.

"I am looking forward to launching the fantastic science that GRaND will deliver as Dawn journeys back in time to the beginning of the solar system," said Tom Prettyman of Space Science and Applications (ISR-1), lead scientist for the Los Alamos instrument and Dawn co-investigator.

## GRaND adventures

The Los Alamos Gamma Ray and Neutron Detector instrument, GRaND, is one of three science payload instruments on Dawn, which also includes a visual and infrared spectrometer and a framing camera, the mission's scientific imaging system. GRaND will measure the elemental composition of the asteroids' surfaces. Radiation detected by GRaND is made by radioactive decay and cosmic ray interactions with the surfaces.

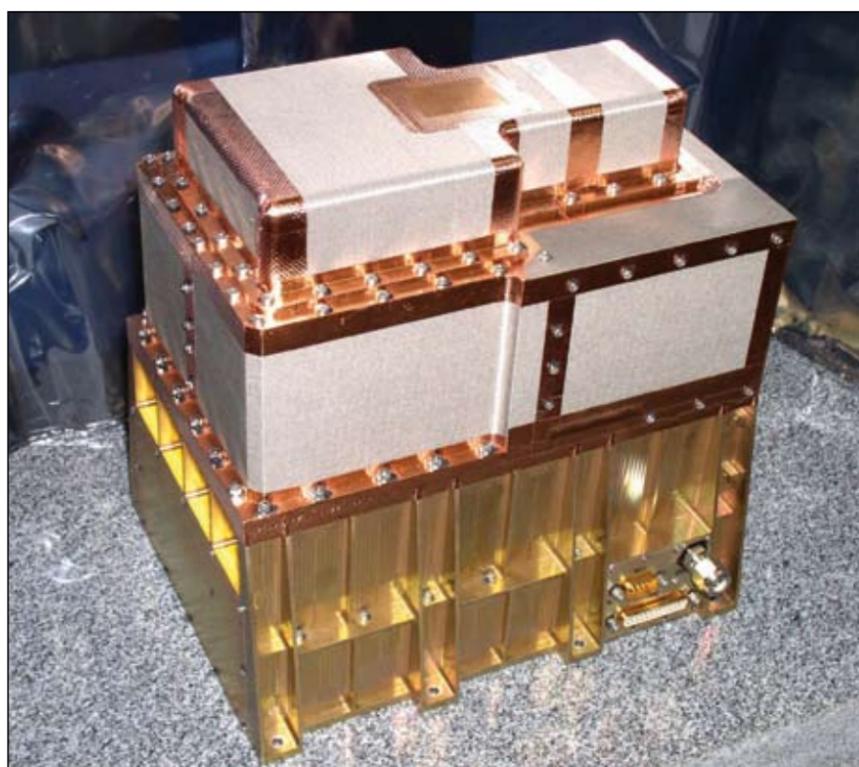
The gamma-ray spectrum provides a fingerprint of the elements within the surface that can be analyzed to determine their abundance. The neutrons provide information about light elements, such as hydrogen and carbon, which are the constituents of ices, as well as strong thermal neutron absorbers, such as iron, titanium, chlorine, gadolinium, and samarium. GRaND can measure many rock-forming elements on Vesta and Ceres.

GRaND's measurements of hydrogen are needed to determine the distribution of water, which may be present on Ceres as ice or hydrated minerals. From a circular, polar mapping orbit, GRaND will map the abundance of these elements over the entire surface of Vesta and Ceres.

## What will GRaND tell us?

GRaND will help answer a number of questions about how the asteroids formed and evolved by showing us maps of where key elements are found and in what abundance. For example, the ratio of potassium to thorium will provide information about the material that grew to form the asteroids and may be useful in determining how the composition of the solar nebula changed with heliocentric distance. The abundance of rock-forming elements, such as iron and titanium, provides information about how igneous rock forms from magma on Vesta.

The large impact basin at the south pole of Vesta provides an opportunity to determine the composition of the interior of this planet, providing additional constraints on structure and thermal



The GRaND is a Gamma Ray and Neutron Detector spectrometer designed to measure elemental abundances on the surface of Vesta and Ceres. Photo courtesy of Space Science and Applications

evolution. The elemental abundance data also will help verify that Vesta is the source of a certain type of meteorites.

Measurements of the abundance of hydrogen and carbon will enable scientists to understand aqueous processes that probably shaped Ceres. Data from all three payload instruments will be combined to provide a complete picture of surface composition, mineralogy, and structure that can be used to answer many questions about the conditions under which planets formed.

The Dawn mission to asteroid Vesta and dwarf planet Ceres is managed by the California Institute of Technology's Jet Propulsion Laboratory in Pasadena, for NASA's Science Mission Directorate, Washington, D.C. The University of California, Los Angeles, is responsible for overall Dawn mission science. Other scientific partners include the Laboratory; German Aerospace Center, Berlin; Max Planck Institute for Solar System Research, Katlenburg, Germany; and the Italian National Institute of Astrophysics, Palermo. Orbital Sciences Corp. of Dulles, Virginia, designed and built the Dawn spacecraft.

Additional information about Dawn is online at [dawn.jpl.nasa.gov](http://dawn.jpl.nasa.gov).

## An astonishing find ...

continued from Page 1

that could be associated with unwanted, confusing foregrounds to the cosmic microwave background (CMB) radiation.

This novel combination of two unique radio telescopes to search for this diffuse synchrotron radiation on intergalactic scales comes at a time when interest in the CMB is mounting. These are the kinds of scales to be imaged by the PLANCK CMB Explorer, which NASA and the European Space Agency are jointly planning to launch within the coming year. Correction of the observed CMB for any foreground fluctuations (microwave "cirrus clouds" and point radio sources) is vitally important because the true, foreground-corrected CMB fluctuations constitute our most powerful probe of the early Universe. The ultimate goal

of CMB studies like PLANCK is to discover incontrovertible evidence on the physical state of the early Universe—during the "hot Big Bang" stage from which dense cosmic matter has been continuously expanding.

For Kronberg and his colleagues, the prominent Coma cloud within this field of view suggests that reconnection—the merging of vast magnetic field lines of opposite polarity—or some similar cosmic acceleration mechanism, is causing the re-acceleration of cosmic ray electrons in intergalactic space, just as a similar mechanism is thought to accelerate electrons in comparably sized giant radio galaxy lobes. And whatever the cause of supergalactic structures like the Coma cloud, Phil Kronberg, like the rest of us, will continue to be astonished by the Universe's grand proportions and intriguing physics.

## Chile Bowl Contest

To help the San Martin de Porres Soup Kitchen expand its facility.

April 28 • 11 a.m. to 2 p.m.  
Big Rock Casino, Española



The San Martin de Porres Soup Kitchen helps feed the poor and hungry.

The Soup Kitchen is a nonprofit organization that relies totally on donations. The San Martin de Porres Soup Kitchen will not refuse anyone regardless of race, color, or creed.

# Lab organization passes tough first-ever audit

by Kathy Delucas

Auditors from the federal Department of Transportation gave the Laboratory the highest achievable rating of “satisfactory” in a recent audit.

Four auditors from around the country inspected the Laboratory’s methods of packaging, handling and transporting everything regulated by the DOT. The auditors reviewed nearly 250 supporting documents for the Laboratory’s entire DOT-based activities.

In an exit briefing, DOT auditors commended the program saying that employees in Packaging and Transportation (OS-PT) are passionate, committed, and dedicated to excellence and called out their diverse expertise in many technical areas.

“My staff also has witnessed this organization’s enthusiasm and commitment during our interactions with them,” Los Alamos Site Office Acting Manager Dan Glenn said in a letter to Laboratory Director Michael Anastasio. “The number of institutional accomplishments that have resulted from this organization’s fine work is impressive.”

“I have the best staff in the world,” Joseph “Dusty” Lowery of Packaging and Transportation said. “They are very responsive and open to change.”

When the transition from University of California management and operations of the Lab to Los Alamos National Security, LLC, occurred last June, Packaging and Transportation had to deal with more than just a name change. It converted the Laboratory from a Department of



George Powell of Packaging and Transportation reviews paperwork related to a recent Laboratory shipment. Photo by Dusty Lowery, Packaging and Transportation

Transportation-exempt entity to a regulated commercial entity. Because of the change of status, the DOT recently conducted its review of the packaging and transportation operations at the Lab.

An unsatisfactory rating from auditors could have resulted in fines and a suspension of hazardous materials transportation activities at the Lab. The implications of

that could have severely affected mission-critical activities, Lowery noted.

Packaging and Transportation is planning more changes for safety and efficiency. The organization plans to change the frequency and conduct of road closures in the very near future. More information about road closures will be highlighted in the Daily NewsBulletin.

## Community leaders give Lab high marks

by Krista D. Black

Leaders in nearby communities are generally pleased with the Laboratory’s education outreach programs, its involvement in local communities, and the overall impact Los Alamos has on the economy.

But the Community Leaders survey also showed that the Lab has some work to do in other areas to satisfy local leaders.

This is the eighth year that the Laboratory has asked government, economic, business, and education leaders, as well as special-interest groups in communities close to Los Alamos, and from nearby pueblos to provide input about the Lab. The survey aims to uncover the perceptions of regional community leaders regarding the Laboratory and its impacts on the region, said Lillian Montoya-Rael, Community Programs Office (CPO) director. Community Programs facilitates the annual survey.

Community leaders said they’re satisfied with the Laboratory’s outreach to educational programs and to the community. According to the survey, 72 percent of respondents are satisfied with the Lab’s educational programs and assistance. The leaders also are satisfied with the Laboratory’s involvement in the community through charitable organizations (66 percent), and 56 percent are satisfied with employees’ contributions and volunteerism.

About 60 percent of community leaders who responded said they are satisfied with the Lab’s efforts to provide effective environmental stewardship, monitoring, and remediation.

According to the survey results, 81 percent of the respondents are satisfied with the overall impact of the Lab on the economy of Northern New Mexico.

Forty-nine percent of the respondents said they’re satisfied with the Lab’s efforts to provide equal opportunities for qualified residents of Northern New Mexico, but only about

three in ten respondents—31 percent—are satisfied with the Laboratory’s efforts to purchase goods and services from regional vendors.

This year’s survey also revealed that 49 percent of community leaders have a favorable impression of the Laboratory and 39 percent believe that the Laboratory is a good corporate citizen. The data also indicate that the community leaders are reserving judgment about Los Alamos National Security, LLC. When asked about their impression of LANS, 43 percent said they did not have enough information to form an opinion, and 19 percent said they had a neutral impression.

In general, respondents are unsatisfied with the Lab’s communication with the community. Less than half of the community leaders who responded—43 percent—said they are satisfied with the methods available for communicating with the Lab; 44 percent are satisfied with the Lab’s efforts to listen to their concerns; and only 34 percent are satisfied with the Lab’s efforts to respond to their concerns.

This is a long-standing perception in the community, Montoya-Rael said. She said Community Programs has developed some new communications initiatives to address it, including regularly scheduled meetings between senior Lab management and community leaders, as well as publications that are not exclusively focused on Lab technical activities, but which also include Lab information and other news of broader interest to community constituents.

The data for this survey were collected between September 22 and October 15, 2006. Research and Polling Inc. in Albuquerque conducted the survey for the Lab, and 298 leaders from Los Alamos, Rio Arriba, and Santa Fe counties, and other surrounding areas responded to the survey.

The survey can be accessed at <http://community.lanl.gov/surveys/2006.pdf> online.

For more information, contact Montoya-Rael at 5-4400 or [lillian@lanl.gov](mailto:lillian@lanl.gov) by e-mail.

# Staying on track

by Hildi T. Kelsey

An endearing, historic symbol of the Old West—the Cumbres & Toltec Scenic Railroad—begins its new season May 26, and the Laboratory is playing a role in keeping the steam-powered locomotive “on track.”

As part of a working group established by Lt. Governor Diane Denish three years ago, the Laboratory was part of a large project team that worked to restore, preserve, and upgrade the 64-mile scenic railroad between Chama in Northern New Mexico and Antonito in southern Colorado. Over the last few years, Los Alamos has provided technical advice, machines, and the economic tools necessary for the railroad to reach its goal of becoming a self-sustaining business.

Throughout the entire process, Elmer Salazar, regional business development executive in the Technology Transfer (TT) Division, was heavily involved in many aspects of the restoration plan and was instrumental in the Lab’s effort to enhance business practices at Cumbres & Toltec.

“This was an excellent opportunity for Los Alamos National Laboratory to offer its cutting edge technology and capabilities in a number of areas as well as propose and implement a new business model for the railroad,” Salazar said.

Through TT Division, Salazar first assisted the railroad by recommending that the Laboratory, through a strategic training partnership with Northern New Mexico College, donate more than \$180,000 worth of salvage-designated machining, welding, and tooling equipment to bring the outdated trains and 19th century machinery into the new millennium. Cumbres & Toltec used the donated equipment to significantly upgrade its shop capabilities, rebuilding and improving cars and locomotives to meet current Federal Railroad Administration regulations, while still maintaining the rustic look of the old-time railroad.

“The shop equipment also offered the opportunity for the railroad to fully develop on-site rebuild capabilities on narrow gauge locomotives,” Salazar said.

Additionally, when the Rio Grande Railroad Preservation Corp. decided in 2005 that it would no longer operate the railroad, Salazar helped create the Cumbres & Toltec Scenic Management Corp. (C&TSMC). The new corporation took over operations in spring 2006 and in its first year of operations saw a 20 percent increase in the number of riders (from 32,500 passengers in 2005 to 39,700 in 2006) and a 21-percent increase in revenues for the railroad. Business owners in Chama, and Antonito also experienced a similar revenue increase of about 20 percent, with the railroad representing roughly 36 percent of the economic activity in these two communities.

“The C&TSMC is committed to running the railroad in a professional and safe fashion and making sure that our business case takes care of our employees and that we as a company are fully engaged in supporting the communities of Chama and Antonito as good corporate citizens,” said Frank Turner, president and CEO of the C&TSMC.

Lately, Governor Bill Richardson and former Colorado Governor Bill Owens have taken a particular interest in and are strong advocates for the railroad.

“The governors of both states have very much appreciated the involvement of the Cumbres & Toltec Scenic Railroad Working Group and particularly the contributions of Los Alamos National Laboratory in helping the railroad move forward in applying new technology to the challenges of updating an 1880s vintage railroad into the 21st century,” said Bill Hume of Governor Richardson’s Office. “Bringing the 21st century technical expertise of New Mexico’s premier center of science and technology to bear on a historic remnant of the 19th century’s then cutting-edge transportation technology is exactly the blending of old and new that makes New Mexico as strong as it is in working for the future.”

## Railroad history

The Cumbres & Toltec Scenic Railroad was constructed in 1880 to serve the silver mining district of the San Juan Mountains as part of the Denver and Rio Grande Western Railroad’s San Juan Extension. The railroad was originally built with its rails close together to save money and to accommodate sharp curves in the mountainous terrain. Unfortunately, nationwide rail standards were much different and the railroad began to get less use as time passed. In 1969, most of the tracks on which the Cumbres & Toltec trains traveled were already changed to the standard rails or dismantled—the route that exists today was saved by a group of historical preservationists.

In 1970, the states of Colorado and New Mexico jointly purchased the C&TSRR track between Chama and Antonito, as well as the equipment needed to run it as a tourist attraction and living museum.

The Laboratory became involved in restoration efforts in 2004 as part of a working group that also included Sandia National Laboratories, Northern New Mexico College, Rio Grande Railroad Preservation Corporation and the Regional Development Corporation.

**2007 Schedule:** Seven days a week, May 26–October 14. See <http://www.cumbrestotlec.com> for official schedule.

Photo by LeRoy N. Sanchez, Records Management/Media Services and Operations

# So...what do you think?

**Q:** April is American Indian Heritage Month in the United States. Do you think it is important that U.S. companies and institutions, most specifically the Laboratory, recognize the value of cultural diversity in the workplace and actively work to ensure it? If yes, why; if no, why not?



**Richard Filemyr of Office Cost and Schedule (CS-OCS-2)**

Absolutely, we are all enriched through exposure to other ideas, new ideas, and cultures.



**Frank Garcia of Records Management/Media Services and Operations (IRM-RMMSO)**

I think it is important because it opens up minds to what others have to offer intellectually and to diverse ideas. I think the Lab has a pretty diverse group and high awareness.



**Vaughn Clinton of High-Performance Computing Systems (HPC-3)**

Yeah, I think so, and we should expect that since we're all taxpayers. My wife was on the Laboratory's African American Diversity working group, and I think the Lab does a fair job in promoting diversity.



**Evelyn Kelley of the Research Library (STBPO-RL)**

Absolutely. I think it is important that the Lab work force is educated in the issues of diversity in the workplace. The activities that the Lab offers are good educational tools for increasing diversity awareness.



**Katherine Frame of Safeguards and Science Technology (N-1)**

Yeah, I guess so, as long as decisions are still made on the basis of merit. I think it is important to recognize different groups of people.



**Joe Gutierrez of Civilian Nuclear Programs (SPO-AEI)**

Yes, you look at world events, as well as local and regional, and they all point to the importance of being sensitive to diversity. As a nation, our priority is to protect our people and our cultural diversity. The whole threat to our nation is economic, and it is important that companies recognize diversity and cultural issues. I know we tend to have a group per month that we recognize, but I don't know if that is divisive or whether we should be more aware of diversity all the time and not just once a month.

## PEOPLE



*Tuson Park*



*Rolando Somma*

### Park, Somma receive Postdoctoral Distinguished Performance Award

**T**uson Park of Condensed Matter and Thermal Physics (MPA-10) and Rolando Somma of Biological and Quantum Physics (P-21) and Complex Systems (T-13) are recipients of the annual Postdoctoral Distinguished Performance Awards.

The Postdoctoral Distinguished Performance Awards recognize outstanding and unique contributions by Lab postdocs that result in a positive and significant impact on the Laboratory's programmatic scientific efforts and status in the scientific community. These awards also recognize unusual creativity, innovation, or dedication and a level of performance substantially beyond that which would normally be expected of a postdoc, said Mary Anne With of the Education and Postdoc Office (STBPO-EPDO).

Park has made significant discoveries in three areas. In 2005, he discovered glassy charge dynamics in a hole-doped insulating copper oxide, a discovery that led to new theoretical and experimental approaches. Later, Park explained unusual behavior of charge scattering in a Landau Fermi liquid, which forced scientists to re-examine assumptions governing such physics. Finally,

Park discovered that the magnetic boundary, which suddenly disappeared in pressure-induced superconductivity, re-emerged with increasing magnetic field, according to review committee members.

Park, a Distinguished Oppenheimer Postdoctoral Fellow, recently received the 2007 Outstanding Researcher Award from the Association of Korean Physicists in America (AKPA). Joe Thompson of MPA-10 nominated Park for the postdoctoral performance award.

Somma has made significant contributions to quantum information theory and quantum metrology. He demonstrated a long-standing conjecture that entanglement is a necessary but not sufficient condition for a quantum algorithm to outperform a classical one. He established a general correspondence between finite temperature classical systems and zero temperature quantum systems, with implications for optimization theory. He also developed explicit quantum algorithms for optimal parameter estimation. This is a significant contribution to the emerging field of quantum metrology, according to review committee members.

Somma is a Director's Postdoctoral Fellow and was nominated by Dana Berkeland of P-21 and Diego Dalvit of T-13.

Yonghao Zhao of the Superconductivity Technology Center (MPA-STC) received honorable mention for his research in mechanical properties and microstructures of nanostructure materials. Yuntian Zhu of MPA-STC nominated Zhao for this award.

Laboratory staff members can nominate postdocs for this award. Nominations are sent to a committee of senior technical staff members who review each candidate and submit their recommendations to the director for approval, explained With.

Park and Somma receive a certificate and a monetary award and also will discuss their work at a Director's Colloquium on May 9 in the Physics Building Auditorium.

For more information about the Postdoctoral Distinguished Performance Awards or about the Lab's postdoctoral program, contact With at 5-5306 or [with@lanl.gov](mailto:with@lanl.gov) by e-mail.

### Sue Stiger to manage environmental cleanup



*Sue Stiger*

**S**ue Stiger is the new associate director for environmental programs at the Laboratory.

"Sue is an extraordinarily talented and accomplished professional. She's ideally suited to help achieve our ambitious goals and effect needed change at the Laboratory," Director Michael Anastasio said.

She joins the Lab April 30.

Stiger, who has managed environmental cleanup operations at some of the U.S. Department of Energy's most challenging and complex sites, joins the Laboratory from Idaho National Engineering Laboratory.

Stiger saved taxpayers billions of dollars by safely and dramatically accelerating cleanups at Idaho National Engineering Laboratory and the Rocky Flats Site near Denver while meeting stringent regulatory requirements. Her Idaho team safely shipped nearly 15,000 drums of transuranic waste to DOE's

Waste Isolation Pilot Plant in 27 months rather than the four years originally scheduled.

Stiger developed disposal strategies for DOE's largest inventory of mixed and low-level waste, at Oak Ridge Reservation in Tennessee, where she achieved the Reservation's first off-site shipment of low-level waste. She also accelerated completion of the transfer of spent nuclear fuel from the damaged nuclear reactor at Three Mile Island to safe long-term storage.

"Sue has worked closely with regulatory agencies to accelerate cleanups—and in a manner that's highly protective of public safety and natural resources," said Anastasio. "Her leadership will help ensure that we demonstrate excellence in environmental stewardship."

Stiger has 30 years of experience in engineering, environmental restoration, waste management, and decontamination and decommissioning, the last nine years associated with Bechtel National Inc. She earned a civil engineering degree from the Massachusetts Institute of Technology.



## April service anniversaries

### 35 years

David Martinez, C-AAC  
John Sutton, ISR-3

### 30 years

Lawrence Haynes, MSS-TA55FO  
Robert Lopez, HX-3  
Sally Preston, EES-DO  
Linda Trujillo, ASM-PM

### 25 years

Joseph Borovsky, ISR-1  
David Holtkamp, P-22  
John Huttenburg, W-6  
Jami Morgan, RP-1  
Leland Morrison, ISR-4  
Debra Sandoval, HR-SVSCTR  
Danny Vigil, AOT-RFE  
Glen Wurden, P-24

### 20 years

Melynda Brooks, P-25  
Gregory Buntain, NN  
Lawrence Cox, CCS-DO  
Herbert Konkell, W-2  
Patricia Sanchez, PADWP

### 15 years

Deborah Allison-Trujillo,  
MPA-MC  
Marc Bailey, ENV-RCRA  
Catherine Finn, N-2  
Antonio Gonzales III, PP-MFG  
John Jameson, FME-IFCS  
Deborah Leyba, HR-WEAPONS  
Roger Rumsey, WCM-3  
Jon Schoonover, MST-7  
Roland Schulze, MST-6  
Lee Steck, EES-11  
Clarita Trujillo, RP-1  
H.J. Turin, C-NR  
Jeremy Valdez, CFO-3  
Lily Wang, MST-6

### 10 years

Carolyn Adams, IRM-DC  
David Alberstein, N-4  
Jeffrey Bull, X-3-MCC  
Leo Chavez Jr., AET-1  
Joseph Crespin, MSS-CMRFO  
Hallie Deaguero, EES-DO  
Victoria Dominguez, RP-1  
Thomas Evans, CCS-2  
Joe Fonseca, W-7  
Paul Gray, W-6  
Sarah Hayes, CAO-SA  
Michael Irving, SEC-DSS9  
Cordell Meyer, ADESHQ  
Jerry Pettis, IRM-DC  
Steven Renfro, W-DO  
Ryan Romero, ERSS-RS  
Jurgen Schmidt, B-3  
Alexei Skurikhin, ISR-2  
Marius Stan, MST-8  
Keith Stephens, AOT-OPS  
Bartolo Torres, SEC-DSS9  
Anthony Valdez, WCM-1  
Eduardo Vigil, CTN-5  
Lorenzo Viramontes, IP-SMFP  
Lynn Wysocki-Smith, SAFE-S7

### 5 years

Charles Apel, IST-IS11  
Gregory Belyeu, CTN-3  
Michael Benelli, PF-MS  
Todd Bredeweg, C-NR  
Robert Brothers, CTN-5  
Andrew Budka, SEC-DSS9  
Kyle Carr, MSS-EWMFO  
Craig Chavez, IAT-2  
Sharon Coble, CT-ESCE  
Clark Denevers, ES-SE  
Barbara Dominguez, SAFE-IIS12  
Velma Dominguez, WS-FWS  
William Feiereisen, PADSTE  
Kenneth French, IST-IS12  
Norman Gillespie, AOT-MDE

James Glownia, MPA-CINT  
Laurie Grano, OCI-OFF  
Stephen Gravener, DE-1  
Dennis Guidry, MST-6  
Dorothy Gurule, MSS-CMRFO  
Susan Hall, ASM-AO  
Amarante Herrera Jr.,  
MSS-TA55FO  
Yvonne Herring, C-CSE  
Dennis Juarros, OM-MS  
Robert Kyser, CMR-OS  
Robert Larsen, N-4  
Roberta Lopez, ISR-4  
Paul Martinez, SEC-DSS9  
Jennifer Martinez, MPA-CINT  
Donna Martinez, CFO-2  
Sue Mathiasmeier, IRM-DC  
Thomas Mclean, RP-2  
George Montano, ISR-1  
Geraldine Montoya, CFO-2  
Carl Morgan, IHS-OS  
Susan Nava, ISR-2  
Brett Okhuysen, D-3  
James Palmer, ASM-SUB  
Beth Perry, IAT-3  
David Rendell, QA-PQ  
Abran Romero, SAFE-IIS12  
Barbara Romero, PMT-4  
Connie Romero, SEC-DSS9  
Raymond Roybal, CFO-2  
Peter Salazar, SEC-DSS9  
James Seubert, WS-FWS  
Glenn Tegtmeyer, SEC-DSS9  
Paul Tiede, SEC-DSS9  
Teresa Toner, ES-DE  
Kenneth Towery, IP-SPPI  
Paul Trujillo, MSS-TA55FO  
Herbert Van De Sompel,  
STBPO-RL  
John Weigle, W-1  
Michelle Whitney, PMT-4  
Dereck Willis, ASM-SUB  
Stefanie Womack, WT-3

## In Memoriam

### Suzann Dye

Laboratory retiree Suzann Dye died March 1. She was 71.

Dye joined the Laboratory in 1979 in the former Personnel (PER) Department. While at the Lab, she also worked in the former Computing, Communications and Networking (CCN) and Isotope and Nuclear Chemistry (IMC) divisions, and the Human Resources (HR) Division. She retired in 1993.

She received an associate's degree in audio visual technology from the Community College of Denver, Golden, Colorado, and a bachelor's degree in business administration from the College of Santa Fe.

She is survived by her husband, Richard; sons Kevin and John; sister Sunya Platner; and five grandchildren.

### Alvin Hues

Laboratory retiree Alvin Hues died April 10 in Los Alamos. He was 83.

A U.S. Army veteran and Portland, Oregon native, Hues came to the Laboratory in 1957 to work in the former Chemistry Metallurgy "Baker" (CMB) Division. He remained at Los Alamos through 1991, retiring from the former Dynamic Testing (M) Division.

Hues earned a bachelor's degree in chemistry from the University of Portland.

He is survived by his wife, Evelyn; daughters, Jacqueline, Vicki Jolin, and Cathy McConnell; seven grandchildren; and three great-grandchildren.

# Students 'blast-off' with Lab outreach programs

by Krista D. Wilde

Students from Chamisa and Piñon Elementary schools in White Rock recently learned about rocketry, thanks to the efforts of Robb Hermes of the Technology Transfer (TT) Division.

Hermes and Thomas Beach, an astrophysicist who teaches at the University of New Mexico, Los Alamos, volunteer with rocket clubs at the two schools. Teachers at both schools and parents of the students also support the programs, said Hermes.

Each year, fifteen to twenty-five rocket club members at each school learn about rocketry and build model rockets. For six to eight weeks, beginning in January, Hermes and other volunteers meet with interested fourth to sixth grade students and help them build their model rockets. When the rockets are built, the students launch them in front of the entire school. This year, one rocket flew to 1,013 feet.

"It's important to get children interested in science when they are young," said Hermes. "When I was young, I became interested in science, because I was interested in rocketry."

The Chamisa program began about eight years ago, and Piñon has had its program for two years.

The Laboratory allows employees up to thirty-two hours per year of paid leave for

science and mathematics education outreach activities. More information on this policy is in Administrative Manual 322.

For more information, contact Hermes at 7-0276 or [rhermes@lanl.gov](mailto:rhermes@lanl.gov) by e-mail.

## April is National Volunteer Month

Employees who want to volunteer can search for opportunities through VolunteerMatch, a network of nonprofit organizations that helps match people who want to volunteer with organizations. VolunteerMatch offers a variety of services, including a searchable database that allows nonprofits to list volunteer opportunities and potential volunteers to find activities that interest them. It also allows employees to track when, where, and how often they volunteer.

To join VolunteerMatch, which is coordinated through the Community Programs Office (CPO), go to <http://volunteermatch.lanl.gov> to register.

For more information about VolunteerMatch, see the February 7 Daily NewsBulletin at <http://www.lanl.gov/news/index.php/fuseaction/nb.archive> online.



Robb Hermes of the Technology Transfer Division helps Ian Forsyth ready his rocket for take-off. Hermes works with students at Chamisa and Piñon elementary schools to spark their interest in science. Photo by Krista D. Wilde



# Mrs. Los Alamos County defies stereotypes

by Krista D. Wilde

Anyone who has seen the movie *Miss Congeniality* knows that “world peace” is a stereotypical beauty pageant answer. And while Mrs. Los Alamos County says peace is her mission, she is anything but a stereotypical beauty queen. Karen Zavicar, who works as an early return-to-work coordinator in Occupational Medicine Operations (OM-OMO), says, “I have a feminine gracefulness mixed with a hard-as-nails personality.”

During the past eight years, Zavicar, a Second Degree Black Belt in Tae Kwon Do, developed an educational program for women called “Key Techniques.” This program covers self-defense, rape prevention, ground fighting, and weapons defense. It also has confidence-building lectures on several topics such as health, fitness, focused goal setting. Key Techniques is offered to victims of domestic abuse; residents of Casa Mesita, a home for girls who are twelve to eighteen years old and who are unable to live in their own homes due to abuse or other family conflict; and other women who want to learn about self-defense.

She and her husband, John of Environment, Safety, Health, and Quality (ADESHQ), also run Zavicar Tae Kwon Do offered through the Los Alamos Parks and Recreation Department.

“I want to impact women, leaving them confident, independent, and very capable to take on the world. This would mean, fewer victims and more peace. If women know how to defend themselves, perpetrators will start thinking twice before attacking, and we will have less violence,” says Zavicar.

During her seminars, she encourages women to “bloom at any age.” At her husband’s urging, she decided to take her own advice and entered the Mrs. Los Alamos County pageant.

A blind selection panel chooses Mrs. Los Alamos County based on picture and application submissions. The Mrs. Los Alamos County application form requested information about the number of years the applicant was married; information about her children, if any; and her involvement in the community. Zavicar didn’t stand in front of an audience or even see the other contestants during the selection. Instead, the pageant director notified her on November 29 that the panel had selected her to represent the County in the Mrs. New Mexico competition.

“The committee is looking for the best representative of the 21st century married woman,” said Zavicar. “It’s about asking yourself ‘What legacy am I trying to set up for future generations? What impact does a woman want to have on those she comes in contact with?’”

Zavicar’s passion for educating women about self-defense is the driving force behind her desire to compete in the pageant. “I don’t want violence to touch the lives of my daughters or the lives of others’ daughters. I want to stop violence across the state and then across the nation. My quest is to become Mrs. America, my mission is to stop violence.”

In June, Zavicar will compete in interview, evening gown, and swimsuit competitions at the Mrs. New Mexico—America pageant in Rio Rancho. The personal trainer and nurse is preparing for the upcoming pageant by enhancing her existing workout routine and answering interview questions from her co-workers.

If she is crowned Mrs. New Mexico, Zavicar will travel to Tucson, Arizona, to participate in the Mrs. America pageant in August.

“I feel honored to be chosen Mrs. Los Alamos County. I think the beauty of Los Alamos is often overlooked, and I hope that if I win the Mrs. New Mexico title, it will encourage people to come here and investigate the wonderful things there are to do in this area,” said Zavicar.

Zavicar recommends this experience to those who have the right motives. “If someone wants to enter for the beauty reason, I’d say it’s not a good idea. It’s true that beauty is skin deep—you have to have a purpose.”



Photo by John Zavicar, Environment, Safety, Health, and Quality