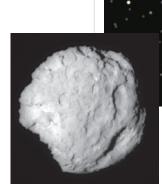


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# Stardust is on its way home

By DC Agle



The JPL-managed Stardust mission is nearing Earth after a 4.63 billion-kilometer (2.88 billion-mile) round-trip journey to return cometary

and interstellar dust particles back to Earth. Scientists believe the cargo will help provide answers to fundamental questions about comets and the origins of the solar system.

Ten days before its return to Earth with the first-ever samples from a comet, Stardust successfully performed its 18th flight path adjustment. This second-to-last scheduled maneuver puts the spacecraft on the right path to rendezvous with Earth on Jan. 15 (Universal Time), when it will release its sample return capsule.

At 10 a.m. Pacific Time on Thursday, Jan. 5, Stardust fired all eight of its 1-pound thrusters for a total of 107 seconds, changing the comet sampler's speed by 2.4 meters per second (about 5.4 mph). A final trajectory correction maneuver is scheduled prior to release of the sample return capsule.

"It was a textbook maneuver," said Ed Hirst, Stardust deputy mission manager at JPL. "After sifting through all the post-burn data, I expect we will find ourselves right on the money."

The velocity of the sample return capsule, as it enters Earth's atmosphere at 46,440 kilometers per hour (28,860 mph), will be the fastest of any human-made object on record. It surpasses the record set in May 1969 during the return of the Apollo 10 command module. Stardust will release its sample return capsule at 9:57 p.m. Pacific Time on Saturday, Jan. 14. Four hours later, the capsule will enter Earth's atmosphere 125 kilometers (410,000 feet) over the Pacific Ocean.

Landing will take place at the U.S. Air Force Utah Test and Training Range, southwest of Salt Lake City. The capsule will release a drogue parachute at approximately 32 kilometers (105,000 feet). Once the capsule has descended to about 3 kilometers (10,000 feet), the main parachute will deploy. The capsule is scheduled to land on the range at 2:12 a.m. Pacific Time. When the capsule reaches the ground, it will be traveling at approximately 4.5 meters (14.8 feet) per second, or about 16 kilometers per hour (10 mph).

The landing area for the capsule is about 44 by 76 kilometers (27 by 47 miles), an ample space to allow for aerodynamic uncertainties and winds that might affect the direction the capsule travels in the atmosphere.

After the capsule lands, if conditions allow, a helicopter crew will fly it to the U.S. Army Dugway Proving Ground, Utah, for initial processing. If weather does not allow helicopters to fly, special off-road vehicles will retrieve the capsule and return it to Dugway. Samples will then be moved to a special laboratory at NASA's Johnson Space Center, Houston, where they will be preserved and studied. Plans call for the canister to be opened two days after landing.

"Locked within the cometary particles is unique chemical and physical information that could be the record of the formation of the planets and the materials from which they were made," said Dr. Don Brownlee of the University of Washington, the Stardust principal investigator.

"Comets are the best preserved samples of the initial material that actually made the sun and Earth and planets, and even ourselves," Brownlee said. "So this is a history project. Even though we only went halfway to Jupiter, we're effectively going to the edge of the solar system as it was 4-1/2 billion years ago."

NASA expects most of the collected particles to be no more than a third of a millimeter across. Scientists will slice these particle samples into even smaller pieces for study.

For more information on the mission, visit  $\mbox{\it http://www.nasa.gov/stardust.}$ 

### Stardust flew by on Jan. 2, 2004.

Comet Wild 2, which

### Coming up in 2006

As Stardust finds its way home, several other key events are in store for JPL as the new year unfolds. Here's a preview of what's to come in 2006.

JPL's next mission to the red planet, the Mars Reconnaissance Orbiter, is on course to reach Mars on March 10. After gradually adjusting the shape of its orbit for half a year in a process called aerobraking, it will begin its primary science phase in November 2006. From the mission's planned science orbit about 300 kilometers (186 miles) above the surface of Mars, the high-resolution camera will be able to discern features as small as 1 meter (1 yard) across.

Launched Aug. 12, 2005, Mars Reconnaissance Orbiter will deliver over the course of its science mission more data about Mars than all previous missions combined. The orbiter's instrument payload will study water distribution—including ice, vapor or liquid—as well as geologic features and minerals. The orbiter will also support future missions to Mars by examining potential landing sites and by providing a high-data-rate relay for communications back to Earth.

Its next scheduled trajectory maneuver, on Feb. 1, and another one 10 days before arrival, will be used, if necessary, for fine tuning. When it reaches Mars it will join several other active missions, including JPL's Mars Exploration Rovers and the orbiters Mars Global Surveyor and Mars Odyssey.

In Earth science, the CloudSat satellite awaits a launch date in 2006. The mission will be the first spacecraft to study clouds on a global basis. The satellite will use an advanced radar to "slice"

through clouds to see their vertical structure, providing a completely new observational capability from space (current weather satellites can only image the uppermost layers of clouds). CloudSat's primary goal is to furnish data needed to evaluate and improve the way clouds are represented in global models, thereby contributing to better predictions of clouds and thus to their poorly understood role in climate change and the cloud-climate feedback. It will join nine other active JPL Earth science missions that have satellites or instruments in

Another mission that has a pending launch date is Dawn. The first spacecraft ever planned to orbit two different bodies after leaving Earth, Dawn will orbit Vesta and Ceres, two of the largest asteroids in the solar system. Pending a current NASA review, the launch could be no sooner than December.

2006 will be a busy year for the Cassini spacecraft at Saturn. After reaching the ringed planet in 2004 and delivering the European Huygens probe to the surface of Saturn's moon Titan early in 2005, the spacecraft spent many of its early orbits visiting several of Saturn's large, icy moons. During 2006 it will focus on Titan, with a total of 13 targeted flybys. The twin Voyagers and Ulysses also remain active.

Peering into deeper space beyond the solar system, the Spitzer Space Telescope and the Galaxy Evolution Explorer observe at different wavelengths in the infrared and ultraviolet, respectively. Both will note their three-year launch anniversaries during 2006.

For more on JPL's missions, visit http://www.jpl.nasa.gov/missions.

## Briefs



Dr. Paul Dimotakis



Dr. Lute Maleki

### New chief technologist named

DR. PAUL DIMOTAKIS has been named JPL's new chief technologist, effective Jan. 30. Dimotakis replaces DR. ERIK ANTONSSON, who will return to Caltech at the end of January to resume his research and teaching

Dimotakis was selected as the result of a search led by a joint JPL/Caltech committee. JPL Director DR. CHARLES ELACHI said that Dimotakis' expertise, experience and prominence in the research and technology community were an outstanding match for the position of JPL's chief technologist.

Dimotakis is a professor of both aeronautics and applied physics at Caltech, where he earned his B.Sc. in physics, M.Sc. in nuclear engineering, and Ph.D in applied physics. He then stayed on as a member of the Caltech faculty, moving up the ranks to the endowed chair in 1995. His research has focused on superfluidity, turbulent flow phenomena, combustion, hypersonic flow and propulsion, laser diagnostics, high-speed image data acquisition and computational adaptive optics.

His space-related activities began while an undergraduate at Caltech. under former JPL Director DR. ED STONE, with work on the Orbital Geophysical Observatory-C satellite in the 1960s. He has also worked on the space shuttle, Mars Pathfinder, the Spitzer Space Telescope, and the analysis of the Shuttle Columbia failure.

### Maleki earns two fellow honors

DR. LUTE MALEKI, a senior research scientist and supervisor of the Ouantum Sciences and Technology Group, has been elected a fellow of both the American Physical Society and the Optical Society of America

These two recognitions, added to Maleki's previous election as a fellow of the Institute of Electrical and Electronics Engineers places him amongst a selected few individuals in technical fields who have been elected a fellow of three professional societies.

The Optical Society of America this fall recognized Maleki for unique contributions to the science and technology of optical generation of microwave references and optical whispering gallery mode microresonators. Only 48 society members were elevated to the rank of 2006 fellow, with the number of fellows being limited to only 10% of total membership.

In November, peers in the American Physical Society's Topical Group on Fundamental Constants recognized Maleki for seminal contributions to the science and technology of frequency standards and their applications to tests of fundamental physics. Election to fellowship is limited to only one half of 1% of the membership.

Maleki's 2000 election to fellow of the Institute of Electrical and Electronics Engineers was for contributions to the science and technology of frequency standards.

### Hadaegh named AIAA fellow

DR. FRED HADAEGH, a senior research scientist and technical supervisor for the Guidance and Control Analysis Group, has been elected a



Dr. Fred Hadaegh

fellow of the American Institute of Aeronautics and Astronautics.

Hadaegh received the honor "for advances in the theory, computation and implementation

of autonomous navigation, guidance

Hadaegh, who also is the manager of JPL's Distributed Spacecraft Technology Program, joined the Lab in 1984. His research interests are in the areas of system identification, estimation theory and spacecraft control analysis and design. He has published extensively on mathematical modeling of uncertain systems, parameter identifiability, identification and control of large space structures and autonomous control of formation flying space systems.

### Im receives fellow designation

For his contributions to spaceborne atmospheric radar remote sensing DR. EASTWOOD IM, radar instrument manager for the CloudSat project and supervisor of the Atmospheric Radar Science and Engineering Group, has been elected a fellow of the Institute of Electrical and Electronics Engineers.

Im has

experience in

meteorological

radar science

radar design

and advanced

technology. He

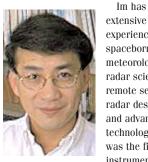
architect of the

was the first

instrument

remote sensing,

spaceborne



Dr. Eastwood Im

multi-functional radar for the Cassini mission to Saturn during the preproject phase (1987–1991), and went on to become the system engineer of that instrument until its launch in

Im has been a member of NASA's Tropical Rainfall Measuring Mission Science Team, the Earth Observing System Aqua calibration science team, and the precipitation measurement missions science team, focusing on the studies of advanced radar techniques and algorithms for precipitation and cloud parameter retrievals and calibration. Since 1998, he has been the principal investigator of several NASA studies, developing new radar technologies for future spaceborne atmospheric science missions.

### Special Events Calendar

#### **Ongoing Support Groups**

Alcoholics Anonymous-Meets Wednesdays at 11:30 a.m.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (the Wellness Place).

Codependents Anonymous-Meets at noon every Wednesday.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)-Meets the first Friday and third Thursday of the month at noon in Building 111-117. For more information, call Randy Herrera, ext. 3-0664.

Parents Group for Children with Special Needs-Meets the second Thursday of the month at noon in Building 167-111 (the Wellness Place).

For more information on any of the support groups, call the Employee Assistance Program at ext. 4-3680.

### Tuesday, January 17

Investment Advice—Fidelity will offer one-on-one counseling. For an appointment, call (800) 642-7131.

JPL Stamp Club—Meeting at noon in Building 183-328.

"New Neighbor in the Sky"—Dr. Mike Brown, Caltech professor of planetary astronomy, will speak from noon to 1.30 p.m. in the campus' Beckman Institute Auditorium. For the past seven years, astronomers around the world have been exploring the sky for planets beyond the orbit of Pluto. After a search of about half of the sky and the discovery of dozens of objects almost the size of Pluto, Brown and his team finally detected the first object larger than this much-debated member of our solar system, one that they are willing to call a new planet. This event is free. For more information, e-mail cma.announce@jpl.nasa.gov or call Doris Shimabukuro, (626) 395-3652.

### Wednesday, January 18

Investment Advice—TIAA/CREF will offer one-on-one counseling in T1720. For an appointment, visit www.tiaacref.org or call (626) 432-6363, ext.

JPL Library Orientation—Stop by Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

"The Coming Revolution in Pharmaceuticals: Structures and Function From Theory and Computation"—Dr. William Goddard, professor of chemistry, materials science and applied physics and director of Caltech's Materials and Process Simulation Center, will speak at 8 p.m. in Caltech's Beckman Auditorium. Free admission. For more information\_call (626) 395-4652 or visit www.events.caltech.edu.

### Thursday, January 19

"Unity and Freedom, the Building Blocks For Tomorrow"—A celebration of the lives of Dr. Martin Luther King Jr. and Rosa Parks will be held from 11 a.m. to 12:30 p.m. in von Kármán Auditorium.

### Friday, January 20

Caltech Women's Club—A "Welcoming Coffee" will be offered from 5:30 to 7 p.m. at the Rathskellar in the Athenaeum. Prospective new members are invited. For more information, contact Katie Clark, (626) 403-7163, ktclark@ caltech.edu, or Vilia Zmuidzinas, (626) 398-4413, vilia@caltech.edu.

### Saturday, January 21

Folk Music—Guitarist Chris Proctor will perform at 8 p.m. in Caltech's Beckman Institute Auditorium. Tickets are \$15 for adults, \$5 for children under 12. For more information, call (626) 395-4652 or visit www. folkmusic.caltech.edu.

#### Monday, January 23

"Musique Du Monde"—This Clazzical Notes event, in collaboration with the Pasadena Symphony, will be presented at 8 p.m. in Caltech's Ramo Auditorium. Free admission. For more information, call (626) 395-4652 or visit www.events.caltech.edu.

#### **Tuesday, January 24**

TIAA/CREF Enrollment Meeting—This workshop, to be held at noon in T1720-137, is designed to assist employees newly eligible for the Caltech/JPL retirement plan with selection of investment options and the completion of their enrollment forms.

"Your Retirement Income Options"— This workshop will be held in T1720-137 from 10 to 11:30 a.m. and is designed for employees who are within a few years of retirement. This program provides a comprehensive discussion of all of TIAA/CREF's income options.

#### Wednesday, January 25

JPL Library Orientation—Stop by Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

JPL Toastmasters Club—Meeting at 5 p.m. in conference room 167. Call Dirk Runge, ext. 3-0465, or visit www.jplcaltechtoastmasters.com.

#### Thursday, January 26

Caltech Architectural Tour—Hosted by the Caltech Women's Club, from 11 a.m. to 12:30 p.m. Free and open to the public. Meet at the Athenaeum front hall, 551 S. Hill Ave. For reservations, call Susan Lee, (626) 395-6327.

Clogging Class—Meets at noon in Building 300-217. For more information, call Shary DeVore at ext. 4-1024.

JPL Golf Club—Meeting at noon in Building 306-302.

JPL Stories—Pete Theisinger, deputy director of the Mars Exploration Program and former Mars Exploration Rover project manager, will present "MER: A Retrospective from the Top" at 4 p.m. in the Library, Building 111-104. If you have questions about the story series or wish to participate, contact Teresa Bailey at ext. 4-9233.

"Science of Magic and Illusion"-Magician Bob Friedhoffer will deliver this free lecture at 8 p.m. in Caltech's Beckman Auditorium. For more information\_call (626) 395-4652 or visit. www.events.caltech.edu.

### Thu.-Fri., January 26-27

Von Kármán Lecture Series-Join JPL oceanographer and Earth Mission Concepts Group supervisor Dr. Paul Digiacomo for "Observations of an Urban Ocean: The Coastal Waters off Southern California" at 7 p.m. Thursday in von Kármán Auditorium and Friday in Pasadena City College's Vosloh Forum, 1570 E. Colorado Blvd. Thursday's lecture will be webcast at jpl.nasa.gov/events/lectures/jan06.cfm. For more information, call Public Services at ext. 4-0112.

### Saturday, January 28

Great Natural Wonders of the World— This high-definition film screening at 2 p.m. in Caltech's Beckman Auditorium will be followed by a discussion with a Caltech scientist. Admission is \$5 (unreserved seating). For more information, call (626) 395-4652 or visit www.events.caltech.edu.

### Monday, January 30

Investment Advice—TIAA/CREF will offer one-on-one counseling in T1720. For an appointment, visit www.tiaacref.org or call (626) 432-6363, ext.

### Retiree receives Air Force honors, 60 years later



Col. Scott Grundahl, commanding officer at the Air Force's ROTC detachment at USC, presents bonors to Frank Colella.

More than 60 years after his military service ended, former JPL Public Affairs Manager Frank Colella has finally received recognition for his heroics for the U.S. Air Force in World War II.

In December ceremonies at his La Cañada home, friends, family and former co-workers saluted Colella as he was presented the Distinguished Flying Cross and two other air medals.

Colella flew 37 missions over German-occupied Europe as part of the 44th Bombardment Group. He was informed of his awards when he left the service in 1944 but procedural snafus caused the long delay. He credited friend Robert Lee Aston, a former Air Force navigator and now an attorney from Georgia, for seeing the paperwork through.

Colella worked at JPL from 1959 to 1988. The ceremonies included presentation of a certification of appreciation from the office of Congressman David Dreier.

## Topex/Poseidon

### COMPLETES ITS MISSION



- Provided the first decade-long global descriptions of seasonal and yearly ocean current changes
- Refined scientists' estimates of rising global sea level during the past decade
- Developed the most-accurate-ever global ocean tides' models
- Provided the first global data set to test ocean general circulation model performance
- Demonstrated Global Positioning System measurements in space could determine spacecraft positions with unprecedented accuracy, enabling rapid delivery of data

By Alan Buis and Rosemary Sullivant

After a remarkable 13-year voyage of discovery, Topex/Poseidon, the first great oceanographic research vessel to sail into space, has ended its mission.

A joint mission of NASA and France's space agency, Centre National d'Etudes Spatiales, Topex/Poseidon lost its ability to maneuver and ceased operations after nearly 62,000 orbits of Earth.

The satellite's pitch reaction wheel, which helps keep the spacecraft in its proper orbital orientation, stalled on Oct. 9, and ground controllers concluded the wheel was not functioning. The satellite remains in orbit 1,336 kilometers (830 miles) above the Earth, posing no threat to the planet.

The end of the mission was announced in a NASA statement this month.

Launched in 1992 to make precise measurements of the ocean surface, Topex/Poseidon was watching in 1997 when the largest El Niño in 100 years changed weather patterns around the world. "Topex/Poseidon didn't discover El Niño," said Project Scientist Dr. Lee-Lueng Fu, a JPL oceanographer, "but it did give us our first global perspective on this and other short-term climate events such as La Niña. It allowed us to follow their evolution and showed that these events weren't limited just to the tropics. It also gave us evidence of even longer-lasting phenomena."

Topex/Poseidon data have also helped in hurricane forecasting, ocean and climate research, ship routing, offshore industries, fisheries management, marine mammals' research, modernizing global tide models and ocean debris tracking.

"Topex/Poseidon was built to fly up to five years, but it became history's longest Earth-orbiting radar mission," Fu said. "It provided, on average, more than 98 percent of the science data it was designed to collect in every 10-day measurement cycle, a remarkable achievement."

The mission's most important achievement was to determine the patterns of ocean circulation—how heat stored in the ocean moves from one place to another. Since the

ocean holds most of the Earth's heat from the sun, ocean circulation is a driving force of climate. "Topex/Poseidon has given us the longest and most complete observations of surface circulation in the deep ocean," Fu said. Topex/Poseidon made it possible for the first time to compare computer models of ocean circulation with actual global observations and use the data to improve climate predictions.

Another of the mission's major accomplishments was to map global tides for the first time. "Tides are the most visible changes in the ocean on a daily basis," Fu explained. "They are important for navigation, they have a big role in biological activity and they are the major source of mixing in the ocean. The mixing may be small in scale, but it has a huge effect." Before Topex/Poseidon, tides in the open ocean could only be estimated.

Topex/Poseidon was the first mission to demonstrate that the Global Positioning System could be used to determine a spacecraft's exact location and track it in orbit. Knowing the satellite's precise position, to within 2 centimeters (less than 1 inch) in altitude, was a key component in making accurate ocean-height measurements possible.

The ocean is a different place now than it was when Topex/Poseidon first set sail. The sea is warmer than it was and is getting warmer faster. Global sea level is rising. Heat in the tropics is moving northward more slowly. In some regions, some currents are faster while others are slower than in the past. "The biggest lesson from Topex/Poseidon is that the ocean is changing all the time." Fu said, "and it is changing rapidly."

"Topex/Poseidon was a unique mission that attracted users around the world, including more than 600 scientists in 54 countries," noted Dr. Yves Menard, Topex/Poseidon project scientist at Centre National d'Etudes Spatiales in Toulouse, France.

The mission's data have been the subject of more than 2,100 research publications. Major science and application achievements include:

• Provided the first decade-long global descriptions of seasonal and yearly ocean current changes

- Refined scientists' estimates of rising global sea level during the past decade
- Developed the most-accurate-ever global ocean tides' models
- Provided the first global data set to test ocean general circulation model performance
- Demonstrated Global Positioning System measurements in space could determine spacecraft positions with unprecedented accuracy, enabling rapid delivery of data.

"Topex/Poseidon revolutionized oceanography by giving us the first global ocean observing system," said Massachusetts Institute of Technology oceanographer Dr. Carl Wunsch, one of the mission's architects and early champions. Oceanographer Dr. Walter Munk, from the Scripps Institution of Oceanography, described the mission as "the most successful ocean experiment of all time."

Jason, launched in 2001, now continues the same observations begun by Topex/Poseidon. For the past three years, the two satellites have flown in tandem, providing twice the coverage of the sea surface. This allowed the study of smaller-scale ocean phenomena like coastal tides, ocean eddies and currents. It also improved understanding of how low-frequency ocean waves transmit signals of climate change.

Jason precisely maps the surface height, wind speed and wave height of 95 percent of Earth's ice-free oceans every 10 days. The data provide invaluable input for short-term weather forecasting, long-term climate forecasting and prediction models.

A future mission, the Ocean Surface Topography Mission, is planned for 2008. It will continue providing high-precision sea surface height data to the oceanographic science community. After that, scientists propose to make more detailed measurements of ocean surface topography to study critical issues such as sea-level rise.

For more information, visit http://sealevel.jpl.nasa. gov and http://www.aviso.oceanobs.com.



Dr. Robert Mitcheltree

JPL'S ONLINE NEWS SOURCE

http://dailyplanet

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Advertising is available for JPL and Caltech employees, contractors and retirees and their families. No more than two ads of up to 60 words each will be published for each advertiser. Items may be combined within one submission. Ads must be submitted via e-mail to universe@jpl.nasa.gov and are due at 2 p.m. on the Monday after publication for the following issue.

All housing and vehicle advertisements require that the qualifying person(s) placing the ad be listed as an owner on the ownership documents.

### Passings

accident.

DR. ROBERT MITCHELTREE, 44, a system engineering principal from Section 313, died Jan. 6 in an auto

Mitcheltree was regarded as the Lab's leading expert on aerodynamics and experimental scaling. He was the verification and validation lead for the Mars Exploration Rovers project's entry, descent and landing phase. On Mars Science Laboratory, he had recently been named deputy chief engineer for entry, descent and landing as well as the EDL verification and validation lead.

He had worked at JPL since 2001 after working for 12 years at NASA's Langley Research Center. Previously, his work included aerothermodynamics analysis on the Mars Pathfinder mission. Last year, he was awarded NASA's Exceptional Service Medal for outstanding achievement and innovation in developing techniques to test the flight dynamics of the Mars Exploration Rover entry, descent and landing system in an Earth environment.

Mitcheltree is survived by his father, Jim, mother Myra, and brothers Mike

Retiree KARL CORDES, 77, died Dec. 9. He worked at JPL from 1964-1990. Cordes is survived by his wife, Helga, daughter Michelle and grandchildren Steven, Kelsey and Connor.

FREDRICK MENNINGER, 81, a retired engineer from Section 332, died Dec. 10.

Menninger joined the Lab in 1959 and retired in 1994. He is survived by children Fredrick III. Linda. Terry. Kevin, Chris and Ned

JAMES LONBORG, 73, a retired electrical engineer and member of the technical staff in Section 349, died Dec. 14.

Lonborg joined JPL in 1956 and retired in 1997. He is survived by his wife, Jean; sons William and John; daughter Susan; and five grandchildren.

Services were held in Las Vegas. Lonborg's family requests that in lieu of flowers, donations in his memory may be made to the James O. Lonborg Memorial Scholarship, c/o the Centralia College Foundation, 600 W. Locust, Centralia, WA 98531.

WALTER L. BROWN, 78, former supervisor of the Deep Space Network Operations Compatibility Test Area, died Dec. 17.

Brown joined the Lab in 1956 and retired in 1992. He is survived by his wife, Elizabeth, and daughters Candace and Nancy.

### etters

I wish to thank my JPL friends for their sympathy on the passing of my grandmother. The beautiful plant has a special meaning in my heart. My family and I very much appreciate all of your kindness.

Suzy Bagdasaryan

The family of Dennis D. Butcher would like to thank JPL for your prayers during our recent loss. The purple and white flower basket sent was beautiful. Dennis was loved by many and we are missing him dearly. Love,

Gina, Tim and Noah

My heartfelt thanks to friends and colleagues at JPL for the support and sympathy we received on the recent passing of my father. The beautiful plant sent by JPL meant a lot during this difficult time.

Paul Kulkarni and family

My family and I would like to thank the JPL family for their overwhelming expressions of sympathy and support in the recent passing of my very dear brother, David. Your flowers, cards, calls and comforting words during such a difficult time were greatly appreciated and will always be remembered.

Jean C. Milbrandt

My family and I would like to thank JPL so much for the lovely plant we received. My mother, Anna Donnert, passed away at age 71 from non-Hodgkins lymphoma cancer two days before Thanksgiving. And to think, she was still water-skiing the year before, at age 70 and every year before that! We truly appreciate your love, kindness and support at this very difficult time. She was an amazing and special woman and the joy in our lives. Our wonderful memories and love for her will forever remain in our hearts. Sincerely,

> Trudy, Glenn, Genelle and Garrett Campbell

I would like to thank JPL and all my friends in 373 for the beautiful plant. that was sent on the death of my beloved stepfather, who died during the holidays. At 92 he was a consummate gentleman and still a scholar, studying Chinese language, culture and history. He will be missed.

Sherri Eastman

My family and I wish to thank our JPL friends for their expressions of love and sympathy on the recent passing of our dear mother. Your prayers, cards and phone calls were so greatly appreciated and helped make our loss easier to bear. Also, thank you for the beautiful plant, which will keep her memory in our home. Frank Mortelliti

My family and I would like to express our sincerest thanks to all our friends, co-workers, and JPL for the condolences, cards and plants that were sent after the recent passing of my grandfather, who played an important role in my life. Your kindness and thoughtfulness helped make the loss easier to bear and the beautiful plant has a special place in my garden.

Kelly Moran and family

### Classifieds

### For Sale

ACCORDION, Da Vinci, \$200/obo; EXERCISE BICYCLE. Tunturi, made in Finland, excellent condition, \$400. 626/462-9457.

CHAISE SECTIONAL, white, excellent condition, \$75. 909/598-0065.

COFFEE TABLE, Ikea, contemporary and large, wood frame with glass top and wheels, vg cond., \$100 (original price was \$250), e-mail for picture. johnnytung@gmail.com. COMPUTER, Macintosh iMac, 96 MB RAM, 4 GB drive, System 9.1, keyboard & mouse included, \$100. 626/797-3310, eves + weekends. DESK, single pedestal oak, 4 drawers in base. locking roll top, excellent condition, \$150.

626/836-8536 DINING TABLE, contemporary, glass top w/black metal frame, 4 matching chairs with dark color fabric, vg cond., e-mail nesnas@pacbell.net for pics, orig. \$350, sell for \$120. 626/287-3143. FURNITURE: white painted and natural wooden kitchen/dining table, white tile top, seats 6. 6 matching chairs included, good condition, \$99.95/obo; office-type wooden table, with

attached extension leaf, + computer keyboard tray, \$75. 310/489-8308, Peter. GUITAR, Guild F47MCE, w/case, almost brand new, sounds and looks beautiful, vintage Starburst finish, acoustic electric, solid wood, retail \$2,399, sacrifice for \$890. 957-2852. HOCKEY TICKETS (4), Mighty Ducks games on 1/13, 1/25, 2/1, 2/12, 3/5; Terrace Main tickets, face value \$15/ea., now \$5/ea.

909/598-0065. MISC.: handbag, new, Kenneth Cole New York leather "fold still" large tote, retail price \$300, sell for \$100; sunglasses, women's Persol, made in Italy, new, paid \$130, sell for \$70/obo; picture, Paradise Waterfall, 46" x 29," moving water & bird sounds (volume control), creates the illusion of moving water, paid \$250, sell for \$100. 653-9037.

MISC.: fax cartridge (model pc-102rf) for Brother machines, brand new, \$20; Jenny Craig diet tapes, set of 14, \$25; computer power control center, 5 power switches + 1 master switch, 5 surge-protected outlets + 2 modem/fax/phone jacks, new, \$20, 790-3899. MISC.: Sony Pro-Logic receiver (STR-D665), \$75; Sony 5-disc CD player (CDP-C545), no remote, \$50 (or both for \$100/obo total); table with 4 chairs (dark, solid wood), \$75. 626/824-5423, Chris, leave e-mail for pics. MISC.: entertainment center, wood, with shelves + cabinet with doors, \$90; beautiful Queen Ann's bench, off white, \$60; complete women's golf club set with bag, \$35; black and off-white women's winter coats, size 6 & 8, \$40/ea. 957-8614, Mina, after 5 p.m. MOVING SALE: mattress, Springair queen size with frame, \$200; contemporary dining set table + 8 chairs + buffet, see picture at http://www.easylifefurniture.com/diningrooms/ bayheights\_dr.html, \$750; all items bought 2 yrs. ago but hardly used. 310/543-8878. MOVING SALE: bedroom set, 2 chests of drawers, 2 night tables, desk & 2 chairs, \$200; computer stand, \$20; loveseat, blue, \$90; full bed, \$75; small dresser, \$20; parquet cocktail table, \$25; matching end table, \$25; spice jar lamp, \$20; fireplace screen, \$15; sofa, blue, \$50; electric hedge trimmer, \$6; lawn spreader, \$5; toaster ovens (2), \$6/ea.; refrigerator, Whirlpool, 18 cu. ft., \$250; cable spool table,

\$15; 10-speed bikes (3), need work, \$25/ea.

ORGAN, Yamaha 415 electronic console w/13 pedals, 3 keyboards, 144 rhythm patterns, pd. \$7,500, sacrifice for \$2,000. 790-3899. PINBALL MACHINE, children's version by Monopoly, removable legs for table-top or free-standing use, 16" wide x 29" long, \$35. 626/303-1927.

REFRIGERATOR, Amana side-by-side, 25 cu. ft., good cond., \$125. 626/351-9641 or Bettyrs@earthlink.net.

REFRIGERATOR, Kitchenaid stainless steel, top freezer, 21.6 cubic ft., model ktrc22khmss only 3 yrs. old, \$700. 310/543-8878. SKIS, 170 cm Rossignol Equipe straight cut

w/Salomon 626 bindings, gd. cond., \$45/obo 626/304-0737.

WASTEBASKET, metal guide rail & white plastic, about 1 x 2 x 3 ft. tall, for inside kitchen cabinets to hide trash, brand new, in orig. box with screws for installation, \$35/obo. 626/840-0955, leave msg. or mlei@ligo.caltech.edu. YARD SALE, multi-family, Saturday, Jan. 14, 9 a.m.-3 p.m., 1758 Oakwood St., Pasadena cross street is Allen; no sale if raining.

### **Vehicles / Accessories**

'96 DODGE Caravan SE minivan, V6 3.0 liter. second sliding door, power windows/door locks, dual front airbags, ABS (4-wheel), 7 passenger, a/c, roof rack, privacy glass, 14,500 miles, \$3,699/obo. 362-2003, Derek

'64 DODGE Dart 270 Classic (Dodge 50th anniv. year), exc. cond., 4 dr., gold, auto trans pwr. steering, slant 6, new tires, 140,700 mi. (70,000 on rebuilt motor; 15,893 at purchase in 1965), have all maint, receipts + owner's manual, \$3,100/obo. 626/449-6698, Kathie '92 FORD Explorer XLT, 99K miles, automatic a/c roof rack some mechanical work needed value \$3,100, sell for \$2,500, 626/447-7379.

'88 FORD E350 Econoline camper van. full pwr, dual fuel tanks, towing pkg., custom top w/6'2" head room; deluxe equipped: gas range, 12V/120V fridge, sink, toilet, etc.; 1 owner, grt cond., only 48K mi., death forces sale, \$6,000/ obo. 310/823-7716 or careyson@webtv.net.

'96 HARLEY Custom Rigid, rigid frame by Atlas, 80CI S&S, 3" drivebelt, 5-spd. trans, 180 rear tire, 21" front wheel, custom forward controls, a great bike, lots of attention, is regtered and I have pink, \$13,000/obo. 626/497-9591, Gene or guido576@yahoo.com

'04 HONDA Pilot EXL, vg cond., 25K miles original owner, warranty, charcoal ext./gray leather interior, \$25,000/obo, 259-0832. '01 HONDA Civic LX, silver, 2 door, good condition, manual transmission, original owner, 81K miles, new tires, immaculate interior, exceptional care, Blue Book list: \$8,700/obo. 626/222-1175, Kathy.

'98 HONDA Accord SE, 119K mi., auto, dual airbags, abs, a/c, ps, cc, tilt, lthr, p/windows, tint, am/fm/cd, pdl, p/mirrors, sunroof, V6, champagne/tan lthr, exc. cond., \$9,000/obo jabreid@integrity.com. 626/390-8585

'95 LAND ROVER Range Rover SE V8 4.0 L auto, 4WD, 138K, tan, leather seats, CD, ps, pw, dual airbags, moonroof, runs great, good condition, \$6,000/obo. 626/296-9073 or 818/515-2461.

'02 LEXUS IS 300, loaded, auto, 6-CD changer, GPS navigation system, everything power moonroof, leather power seats, spoiler, 37K miles, \$20,995. 909/599-3230.

'00 MERCEDES-BENZ CLK 430, silver 2-door convertible with gray top and interior, AMG package, many extras, heated seats, custom wood/leather steering wheel, custom rear bumper with dual exhaust, 69K miles, free maintenance until 100K miles, excellent cond. must see, \$30,000/obo. 634-4332

'97 MERCEDES-BENZ E320, champagne w/tan leather interior, 4-door sedan, chrome rims, CD changer, alarm, moon roof, new tires, well maintained, excellent condition, orig. owner, service records avail., custom car cover included, 69,900 mi., \$15,500. 626/993-7119. '95 MERCEDES S420, black with tan interior.

93K miles, \$12,000. 626/577-7687. MOPED, Sears, 50 cc, needs work, \$65/obo. 323/344-7209.

'01 NISSAN Frontier, Aztec red, 41,000 miles stick shift, am/fm/cd, a/c, bedliner, gray interior, back camper, great work truck, orig. owner, \$7,000/obo. 626/372-9646, Colleen.

'70 OLDSMOBILE 98 conv., red w/white top & white interior, power windows/locks/seat, top tilt/tele steering wheel, cruise control, chrome wheels, rare car, great cruiser, \$14,500/obo.

'98 TOYOTA Sienna minivan, V6 LE, 194 HP, 85K miles, light blue, exc. cond., dual A/C, 12-disc CD changer, dual sliding doors, 1 owner, \$8,500. 909/592-2279.

### **Lost & Found**

LOST: ladies silver-tone Citizen quartz watch, in Building 301, 230, 264 or between Bldg. 264 and the east lot, missing since 12/15/05. Ext. 4-1147, Kathy.

### Wanted

909/938-0410.

CALCULATOR, Curta Type II, in good working condition. 626/798-9648, Andy

FLUTE OR C INSTRUMENT PLAYER to practice w/guitar for occasional performance for seniors or church functions, need for January. 626/840-0955, leave msg. or mlei@ligo.caltech.edu. MATH TUTOR, jr. & sr. high school level class-

es (geometry, pre-algebra, algebra I & II, SAT math, etc.), eyes and/or weekends, also English tutors. 888/784-1639, David, leave msg ROOM TO RENT, mature, professional woman, for 4 weekday nights, Monday p.m. thru Thursday a.m.; living in Chino Hills, commuting to Pasadena to CEC Woodlyn Office (Altadena & Washington) almost 2 hours each way, all I need is a room to sleep, a place to bathe/ shower, small section in refrig. + cupboard for small amount of food; I do not need laundry, phone, TV, computer; just the necessities

ROOMMATE to share Arcadia townhouse (easy access to SA mall, 210 fwy.); quiet, lg. bedrm. with private bathroom, space in attached 2-car garage; unit has washer/dryer, large kitchen, 2 patios, nice living area (cable ready); central air and heat; water and trash included; non-smoker, clean, no pets, month-to-month, \$750 + share utilities, 626/399-7697, Matt.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. mrayman@alumni.princeton.edu, 790-8523, Marc Rayman.

VANPOOL RIDERS, full- and part-time seats avail. on Ontario vanpool w/stop in San Dimas; save \$ and time, be energy-efficient; JPL emplovees who are full-time riders can qualify for a \$50/mo. subsidy. Ext. 4-7672, Shelly Norman or 3-7484, Becky Campos, for times, route and monthly fares or the Rideshare Office, 4-7433. VANPOOL RIDERS, Valencia to JPL, leaves Do-It Center 6:30 a.m., leaves JPL 4 p.m., cost \$110/mo. or \$5.50/day. 653-9134, Chris.

#### Free

CAT. 3-year-old neutered male, short hair. white with black patches and black nose, loves humans, hates cats, playful, indoor/outdoor, prefer single-cat home. 626/840-0955.

#### **For Rent**

ALTADENA, comprehensively furnished extended-stay sabbatical house: 3 bd., study, boundary Angeles Nat'l Forest, 3 mi, from JPL, trail access, view, fireplace, oak floors, antiques furniture, beds, dinnerware, utensils, pots/ pans, all linens & towels, fine soaps, necessities included; just bring toothbrush & clothes TV/DVD/VHS, Dish satellite, wireless DSL; garden, fruit trees, patio, garage; private, immaculate; available February. 626/798-3235.

ALTADENA, room in 2 bd., 1 ba., 1920 Spanish style adobe home, 3 mi. from JPL; to share with 1 person and a cat; a non-smoking and respectful person who possesses a nice balance of left- and right-brained qualities would be great; \$600 incl. utilities. 626/345-0625.

ARCADIA apt., 2 bd. + large den, 1 ba., garage, remodeled kitchen, washer/dryer in unit, a/c, stove, dishwasher; clean, spacious walking distance to shop, exc. neighborhood; no pets; water/gardener/trash included; \$1,499 + utilities & security deposit. 626/576-7333.

ARCADIA apt., 2 bd. +2 ba., garage, a/c, stove new paint, new tiling in bath/kitchen, convenient location, walking distance to shops and food court, near SA mall and 10/210 fwys., no pets, \$1,299. 626/576-7333.

BURBANK, small separate 1-bd. rear house 14 miles from JPL; quiet, all refurbished and clean, gas stove, suitable for 1 person; prefer long-term stable resident, \$700, 848-2922. 246-3777.

LA CANADA, studio guest house, kitchenette, storage shed, patio, park-like yard; includes utilities, satellite TV; recently updated; no pets/smoking; single quiet person; \$1,050 . 790-6738.

PASADENA, easy going, non-smoker housemate wanted: small bedroom in a 4-bedroom house, walking distance from JPL (2 blocks); central air/heat, fireplace, patio and backyard; laundry/kitchen privileges, wireless network, satellite/TV, no pets; off-street parking; \$650 -\$400 deposit, utilities included. 626/807-0699. PASADENA foothills area, beautiful Spanish Mediterranean home, 3 bd., 2 ba.; fireplace, new kitchen & new appliances, new electrical, plumbing and landscaping; secluded area; \$2,850, landlord pays for water and gardener and six months of trash. 626/644-7753, Mr.

PASADENA, near Old Town & South Lake shops, 6-unit building, large lower 2-bd. apt. home, with 2 full baths, tiled entry, forced air and heat, fireplace, patio, sub-parking (2 spaces), secure entry, wonderful landlord, \$1,550. 626/449-1155.

### **Real Estate**

PASADENA house, 4 bd., 1.75 ba., w/sacred views,' wood floors and crown moldings throughout, solar hot water, newish HVAC and roof, freshly painted inside and out, landscaped with roses, birds of paradise, etc.; large fenced pool, 2 patios, garage; great for family and entertaining, good schools, safe neighborhood, close to shops; large LR/DR, lovingly polished and renovated kitchen and bathrooms: must see; \$919K. 626/351-8336.

SOUTH PASADENA triplex, by owner, \$1.1M with over \$5,000 monthly income, 541-1074.

### **Vacation Rentals**

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, beautiful master bd. suite, sleeps 6. 949/786-6548.

COSTA RICA, Quepos, Manuel Antonio area; quiet 2 bd., 2 ba., great for 2 couples, air, full kitchen, 1,000 sq. ft. cable TV, pool, fully furnished, tennis court; near parks, monkey tour, canopy tours, front desk can arrange special JPL rates. CostaRicamycondo.com LuisAlfaro@earthlink.net, 760/723-8522.

FLORIDA condo, beautifully furn. 2 bd., 2 ba., 2nd floor, on the surf of New Smyrna Beach, half-hour to Cape Canaveral, 90 min. to Disney World: enjoy all the comforts of home, quiet, relaxing, overlooks beach, BBQ/pool/game room easy walk to stores and restaurants 760/439-7821, Darlene, dfhauge@yahoo.com. GRAND TETON / YELLOWSTONE Nat'l Parks, visit in style, 2 bd. + loft townhome, totally outfitted, stunning Teton view, sleeps 6, cable, microwave, etc., borders Grand Teton, conniematt@sbcglobal.net.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf. 1 bd w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps 4, laundry fac., \$145/nite/2. \$20/nite/add'l person. 949/348-8047, iackandrandv@cox.net.

MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitchen incl. microwv. D/W, cable TV, VCR, phone, balcony w/mtn. vw., Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc'nt. 626/798-9222, 626/794-0455 or valeriee@caltech.edu.

OCEANSIDE beachfront: lovely 2 bd., 2 ba. single-level deluxe condo w/fireplace and white water ocean views (end unit); luxurious gated complex on the sand w/game rooms, fitness room, pools, BBQs, and Jacuzzi; 10-min. walk to pier or the harbor; sleeps 6; JPL discount. http://www.beachvisitors.com, 760-433-4459. OCEANSIDE condo, on the sand, charming 1 bd., panoramic view, walk to pier or harbor pool, spa, game rm., sleeps 4. 949/786-6548. ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to ocean on

private rd., 18-hole golf course 6 mi. away,

private secure parking. 626/794-3906.



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### Stardust completes journey home

Scientists say samples exceed expectations

Above: Investigators get their first look at the aerogel grid holding cometary samples.



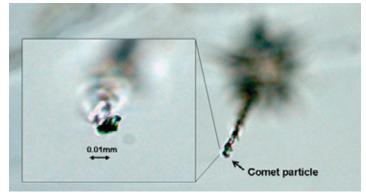
### JPL's Stardust sample return mission returned

safely to Earth when the capsule carrying cometary and interstellar particles successfully touched down at 2:10 a.m. Pacific time on Jan. 15 in the desert salt flats of the U.S. Air Force Utah Test and Training Range.

Stardust traveled 2.88 billion miles during its seven-year round-trip odyssey to comet Wild 2. Scientists believe these precious samples will help provide answers to fundamental questions about comets and the origins of the solar system.

"Ten years of planning and seven years of flight operations were realized early this morning when we successfully picked up our return capsule off of the desert floor in Utah," said Tom Duxbury, Stardust project manager at JPL. "The Stardust project has delivered to the international science community material that has been unaltered since the formation of our solar system."

Stardust released its sample return capsule at 9:57 p.m. Pacific time on Jan. 14. The capsule entered the atmosphere about four hours later, followed by the deployment drogue and main parachutes five minutes apart. Helicopters then swooped down to pick up the capsule, which was carried to a temporary cleanroom nearby at the U.S. Army Dugway Proving Ground.



Comet particles are shown embedded in Stardust's aerogel collector.

"I have been waiting for this day since the early 1980s when Deputy Principal Investigator Dr. Peter Tsou of JPL and I designed a mission to collect comet dust," said Dr. Don Brownlee, Stardust principal investigator from the University of Washington. "To see the capsule safely back on its home planet is a thrilling accomplishment."

Two days after landing, the capsule's science canister was transferred to Johnson Space Center in Houston. After opening the canister, scientists confirmed that samples from the comet and interstellar dust had indeed been embedded in the capsule's aerogel-laden grid.

Tsou, who invented the technique of intact capture of hypervelocity particles for just such a mission as Stardust, said researchers were ecstatic with the collection of the cometary and solar materials from outer space. "Stardust is the realization of a 25-year dream to capture and return samples from a comet," he said.

"The collection of cometary particles has exceeded our grandest expectations," said Brownlee. "We were absolutely thrilled to see thousands of impacts on the aerogel."

Inside the capsule, a tennis racket-like sample tray holds the particles captured in a gel as the spacecraft flew within 149 miles of comet Wild 2 in January 2004. An opposite side of the tray holds interstellar dust particles caught streaming through the solar system by Stardust during its seven-year journey. The team is analyzing the particle capture cells and removing individual grains of comet and interstellar dust.

Dr. Michael Zolensky, Stardust co-investigator and curator, said the samples would be distributed to more than 150 scientists worldwide for study. He said areas of analysis would include isotopes, bulk composition, mineralogy and petrology, optical and spectroscopic properties, organics, small impactors and interstellar grains.

## Rovers' 2-year anniversary marked

JPL celebrated the two-year anniversary of the Opportunity rover's landing on Mars on Jan. 24. This month also marked the first full martian year on the planet for Opportunity and its twin, Spirit. Among the festivities, clockwise from top left:

NASA Administrator Mike Griffin offers a video tribute to the rover team; Congressman David Dreier receives a gift of thanks from Lab Director Dr. Charles Elachi for Dreier's ongoing support; Mars Science Laboratory Project Manager Richard Cook gives a preview of that mission, launching in 2009; and La Cañada-Flintridge Mayor Anthony Portantino (left) presents a city proclamation to former Mars Exploration Rover Project Manager Pete Theisinger. To see the celebration online, visit <a href="http://dailyplanet.jpl.nasa.gov/multimedia.php">http://dailyplanet.jpl.nasa.gov/multimedia.php</a>.









hotos by Dutch Slag

## News Briefs



Jonas Zmuidzinas

### First joint faculty appointment named

Caltech Professor JONAS ZMUIDZI-NAS is the first researcher selected to participate in the new Joint Faculty Appointment Program at JPL. Zmuidzinas is teaming with JPL astrophysicists on submillimeter astronomy and detector development. He will reside in the Astrophysics and Space Science Section in the Science Division (32).

"Jonas is one of the world leaders in submillimeter detector development and studies of the interstellar medium," noted JPL Chief Scientist TOM PRINCE. "He is already well-acquainted with JPL through his active collaborations with several JPL scientists and technologists. I can't think of a better person to be the first campus—JPL joint appointment."

Zmuidzinas already has a long association with both Caltech and JPL. "My father was a graduate student at Caltech when I was born," he said. "I was a child when he started working at JPL, and I remember going into his office and trying to make sense of all the squiggles on his chalkboard." Zmuidzinas now has his own office at JPL, but his "squiggles" are recorded on a whiteboard instead of a chalkboard.

"I am quite excited about this joint appointment," he said. "I have been talking to lots of people—and getting the chance to have more personal interactions with my JPL colleagues. This is a good opportunity to expand my knowledge of the people here, and their research. I will be pushing hard on the detector work, trying to make this close connection with campus even stronger," Zmuidzinas said.

The purpose of the Joint Faculty Appointment program is to promote strategic collaboration with universities with the goal of enhancing the research capabilities of both JPL and the university partner. Joint appointments may be made with faculty members of Southern California universities, such as UCLA, USC and Caltech. These positions are targeted for identified strategic areas in science and technology that will benefit JPL. Appointees will divide their time between JPL and their home universities. While local universities are being targeted at the outset of this program, this does not prohibit future expansion of appointments to out-of-area schools when such appointments make strong strategic sense.

Candidates will generally be selected by search committees appointed by the chief scientist and/or chief technologist. Final candidate selection will then be approved by the director for engineering and science, chief scientist and/or chief technologist, and the Laboratory director. The positions are co-funded by JPL and the partner university. A maximum of 10 Joint Faculty Appointments may be funded at one time by JPL.

### **Blood drive in February**

The next on-Lab blood drive will be held in von Kármán Auditorium on Tuesday, Feb. 7, from 11:15 a.m. to 5:15 p.m. and Wednesday, Feb. 8, from 7 a.m. to 1:15 p.m. Sign up on the confidential Red Cross website at www.givelife.org/index.cfm?hcl=JPL. Enter "JPL" instead of a zip code or sponsor code, then click "search." Advance signup sheets will also be available at JPL Occupational Health Services, Building 310-202, prior to the blood drive. For last-minute signups, or to change your appointment, call the Red Cross at (213)

Everyone who participates in the February blood drive will receive a coupon for Daphne's Greek Café,

compliments of the Red Cross. For more information, visit http://www.redcross.org/services/ biomed/blood/supply/tse.html.

### Special Events Calendar

### **Ongoing Support Groups**

Alcoholics Anonymous—Meets Wednesdays at 11:30 a.m.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (the Wellness Place)

Codependents Anonymous—Meets at noon every Wednesday.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)—
Meets the first Friday and third Thursday of the month at noon in Building 111-117. For more information, call Randy Herrera, ext. 3-0664.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in Building 167-111 (the Wellness Place).

For more information on any of the support groups, call the Employee Assistance Program at ext. 4-3680.

### Friday, January 27

Von Kármán Lecture Series—Join JPL oceanographer Dr. Paul Digiacomo for "Observations of an Urban Ocean: The Coastal Waters off Southern California" at 7 p.m. in Pasadena City College's Vosloh Forum, 1570 E. Colorado Blvd. For more information, call Public Services at ext. 4-0112.

#### Saturday, January 28

Great Natural Wonders of the World—This high-definition film will be shown at 2 p.m. in Caltech's Beckman Auditorium. Julie O'Leary, from Caltech's Geophysics Department, will introduce the film and lead a post-screening discussion. Admission is \$5 (unreserved seating). For more information, call (626) 395-4652 or visit www. events.caltech.edu.

### Monday, January 30

Investment Advice—TIAA/CREF will offer one-on-one counseling in T1720. For an appointment, visit www.tiaa-cref.org or call (626) 432-6363, ext. 2614.

### Wednesday, February 1

Associated Retirees of JPL/Caltech— Meeting at 10 a.m. at La Cañada United Methodist Church, 104 Berkshire Place, La Cañada. Call (626) 794-1698 to leave a message for an ARC board member.

JPL Library Orientation—Stop by Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

"Oppenheimer's Legacy: Science and Government in the Shadow of Nuclear Weapons"—Martin Sherwin, professor of history at Tufts University, will discuss J. Robert Oppenheimer, former Caltech physicist, "father of the atomic bomb," science advisor, opponent of the hydrogen bomb and the most prominent victim of the McCarthy era, in a free lecture at 8 p.m. in Caltech's Beckman Auditorium. Free admission. For more information, call (626) 395-4652 or visit www.events.caltech.edu.

#### Thursday, February 2

JPL Gun Club—Meeting at noon in Building 183-328.

Violin Lecture—Violinist Midori will speak at 8 p.m. in Caltech's Beckman Auditorium. Free admission. For more information, call (626) 395-4652 or visit www.events.caltech.edu.

### Tuesday, February 7

Credit Union Annual Meeting—Members will gather at 5:30 p.m. in Caltech's Beckman Institute Conference Room.

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

### Wednesday, February 8

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Library Orientation—Stop by Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

JPL Toastmasters Club—Meeting at 5 p.m. in conference room 167. Call Dirk Runge, ext. 3-0465, or visit www. jplcaltechtoastmasters.com.

### Thursday, February 9

An Evening with Nikki Giovanni—The world-renowned poet, writer, commentator, activist and educator will speak at 7:30 p.m. in Caltech's Beckman Auditorium. Free admission. For more information, call (626) 395-4652 or visit www.events.caltech.edu.

Clogging Class—Meets at noon in Building 300-217. For more information, call Shary DeVore at ext. 4-1024.

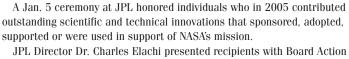
### Lab ceremony honors MLK, Parks





"Unity and Freedom, the Building Blocks for Tomorrow," presented at JPL on Jan. 19, honored the memory of civil rights leaders Martin Luther King Jr. and Rosa Parks. Former JPL Executive Council member Dr. Jim King, left, was the keynote speaker. Above, the Zenith Dance Coterie is shown performing "Wade in the Water," one of their two dance routines.

## Technical innovators honored



Space Act Awards, which are issued by the NASA Inventions and Contributions Board. Two hundred and twenty-five individual JPL employees and contractors received a total of about \$205,500. Although the ceremony is held twice a year, submission for the award is accepted on a rolling basis.

The Board Action Space Act Awards represent one of four NASA Space Act Awards. The three others are NASA Tech Brief Awards (for publication in the NASA Tech Briefs periodical), Software Awards (for software that is mature and delivered to a customer) and NASA Patent Awards (for technology that NASA elects to patent). The Board Action Space Act Awards are the most prestigious, and involve a formal evaluation by the NASA Inventions and Contributions Board to determine the monetary award amount (up to \$100,000 per case).

JPL continues to lead all NASA centers in the total dollars for NASA Space Act Awards by a margin of three to one over the next NASA center. For all of FY '05, JPL innovators and collaborators received a

total of \$767,200, which is 45% of the \$1,692,500 distributed to all of the NASA centers combined. This amount consisted of 1,301 individual awards, which is 47% of the 2,789 individual awards given by the NASA Inventions and Contributions Board to all NASA centers combined. Over the past three

years, total Board Awards received by JPL innovators have increased from \$307,000 to more than \$393,500.

Many innovations have not been reported in a NASA New Technology Report, so it is never too late to file one. As long the innovations meet the criteria listed below, JPL technologists are encouraged to complete the Preliminary Space Act Award questionnaires, which are available online at <a href="http://ntr/forms/form\_1329-preliminary.doc">http://ntr/forms/form\_1329-preliminary.doc</a>. Evaluators will use this information to determine if it is appropriate to proceed with the formal NASA Space Act Award application.

The Inventions and Contributions Board determines award amounts, which range from \$500 to \$100,000 based on the significance and value to NASA. Awards are given to contributors whose innovations have been published in NASA Tech Briefs (\$350 per author); for software that has been approved for release to qualified users (\$1,000 for a sole author, \$500 each for multiple authors), or inventions that have received approval for patent application by NASA (\$1,000 for a sole inventor, \$500 each for multiple inventors).

The Invention and Contributions Board reviews applications for Board Awards every other month. The next deadline for consideration is Feb. 27. If you meet the criteria listed below, please call Rani Kamarga at ext. 3-7995 for a preliminary questionnaire. For more information, contact Dr. Christopher Jaggers, the JPL awards liaison officer for the NASA Space Act Awards, at ext. 3-4904.

Space Act Award criteria:

- $\bullet$  The scientific and/or technical innovation has significant value in the conduct of aeronautical and space activities.
- The scientific and/or technical innovation has been used in a NASA program or adopted or sponsored or supported by NASA.
  - New technology must be reported online at http://nbs.
- For software, a recommendation for a Software Available for Public Release Award must have been received.



JPL Director Dr. Charles Elachi joins
Lucia Marino and Scott Gluck, two of
the recipients of NASA Space Act Awards.

## LAB HOSTS STATE HEARING ON MATH, SCIENCE EDUCATION

Legislators hear from experts about how to better interest students, improve standards and hire and keep quality teachers

By Mark Whalen

From left: State senators Gloria Romero and Jack Scott, assemblywoman Carol Liu. Below: Kyndall Brown, left, and Sara Munshin, both representing the California Math Council, testify at the hearing.



Making science fun and interesting for students, more flexible curriculum policies, and improved teacher recruitment and retention were the key themes discussed in a JPL-hosted joint State Senate-Assembly hearing on the future of math and science education on Jan. 20.

Organized by JPL's Office of Legislative Affairs and Education Office, the event was led by State Senator Jack Scott, chair of the Senate Education Committee, and Assemblywoman Carol Liu, chair of the Assembly Higher Education Committee. JPL lies in the district of both legislators. State Senators Gloria Romero and Tom Torlakson were also in attendance.

Scott, the former president of Pasadena City College, expressed concern about a recent study showing that 11 countries outperformed American fourth-graders in math. He also noted that China is graduating four times as many engineers as the United States. And he said the teacher workforce is getting older, with 97,000 teachers needing to be replaced in the next 10 years.

> He called the problem not just one of education, but also of economics. "I think America's competitiveness is at stake," he said.

Angela Diaz, from NASA's Office of Education, began the testimony, noting that "NASA can inspire students in STEM (science, technology, engineering and math) as few organizations can." She added that "California is an ideal partner to help us achieve our

Former astronaut Sally Ride testified that students' interest in math and science drop significantly during the middle- and high-school years, particularly among girls. She said that only 11 percent of engineers and 20 percent of scientists are women.

"We have to make science interesting and cool, and fuel that enthusiasm to help girls through middle school," Ride said. She added the importance of introducing girls to female role models.

Witnesses spoke about how they believe state education policies create obstacles for teachers. "They are told not to teach science in the early grades, particularly in grades K-3," said Dean Gilbert, president of the board of trustees of the California Science Teachers Association. He added that teaching standards ought to focus on students' critical thinking and problem solving. rather than memorizing content.

Gilbert also stressed the need to retain quality teachers, urging the legislature to work to improve science teachers' professional development programs, which he claimed have recently been replaced by an umbrella program to focus on language arts and math.

"We have world-class standards, and we need the legislation to back that up," he said.

Sara Munshin, past president of the California Math Council, said processes for selecting the state's curriculum content review panels "need to be more

open and fair." Liu acknowledged "complaints" about the curriculum commission and said that new legislation has been submitted to limit terms of commission members.

David Marsh, an associate dean of education at USC, urged legislators to update "out of balance" state teaching standards that are focused too much on tests. He added that incentives are needed to help students go into teaching, suggesting scholarships as better options than student loans.

Several educators testified about how California can interest, train and retain more qualified science and math teachers.

Beverly Young, assistant vice chancellor of the California State University system, discussed the Mathematics and Science Teacher Initiative, whose goal is to at least double the production of math and science teachers in the next five years. That would mean 1,500 new teachers in these fields.

To help achieve teacher quality and retention, Young noted a collaboration between the California State University and NASA that offers workshops and courses for CSU faculty, K-12 teachers and community college instructors. The partnership includes a JPL program of in-service professional development that promotes the importance of math and science and motivates teachers to stay in the field, including paid summer internships for math and science teachers.

Dr. France Cordova, former NASA chief scientist and current chancellor of the University of California, Riverside, testified that the University of California's California Teach program has the goal of quadrupling the number of graduates who go on to teach K-12 science and math by 2010, annually providing the state with more than 1,000 additional highly qualified math and science teachers.

"Legislation can help launch a new era of enthusiasm in science among students, through support of the UC and CSU programs, funding to prepare under-represented students and tax incentives for university partners," she told the panel.

The panel heard about an alternate route to teacher recruitment. Layla Avila, representing the nonprofit New Teacher Project, testified that the organization targets mid-career professionals who are inspired to switch careers. The New Teacher Project selects, trains and finds jobs for candidates, and prepares them for state certification.

Avila said the average age of program applicants is 32, about 25 percent of which have already completed a graduate degree. Participants undergo an intensive two-week math immersion program and seven weeks of in-service training.

"There are thousands out there who want to teach," she said, telling the panel that the program recently helped New York City hire 6,000 new teachers in high-need subject areas, half of which teach science and math.

Currently, an Oakland school district is participating in the program. Scott expressed interest in pursuing further study.

Liu called the 3 1/2-hour hearing "informative and thought provoking," adding that the testimony may help shape future legislation." Scott said the panel "will go away from the hearing with a resolve to improve."

### **High winds blow through Lab**

Even the deer found the footing treacherous on Monday, Jan. 23, following heavy winds in the area. Facilities Division Manager Robert Develle said most of the damage resulted from toppled outdoor furniture and debris from broken tree branches. Though the Lab shut down for most of Monday, Develle said it suffered no structural damage and no power outages.



### JPL'S ONLINE NEWS SOURCE

http://dailyplanet

E-mail us at universe@jpl.nasa.gov

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### **Notice to Advertisers**

Advertising is available for JPL and Caltech employees, contractors and retirees and their families. No more than two ads of up to 60 words each will be published for each advertiser. Items may be combined within one submission. Ads must be submitted via e-mail to universe@jpl.nasa.gov and are due at 2 p.m. on the Monday after publication for the following issue.

All housing and vehicle advertisements require that the qualifying person(s) placing the ad be listed as an owner on the ownership documents.

### Passings

Retiree ROBERT E. HILL, 81, died

Hill worked at the Lab from 1974 to 1989. He is survived by three sons, one daughter, three grandchildren and two great grandchildren.

Services were held at Rose Hills in Whittier.

JOHN CAVENY-BROWN, 73, retired from Section 6611, died Dec. 13.

Caveny-Brown worked at JPL from 1982 to 1996. He is survived by his wife, Mary Jane, daughters Cheryl Tetlow and Allison Brown, son Damon Brown and three grandchildren.

Memorial services were held Jan. 7 at the Whidbey Institute Sanctuary.

JOYCE MURRY-BOOTH, 73, retired from Section 641, died Dec. 24.

Murry-Booth joined JPL in 1966 and retired in 1988. She is survived by her husband, Norman, daughters Brendell Ashton and Janice Lopez, stepson David Booth, stepdaughters Robin and Stephanie Booth and seven grandchildren.

Services were held at Forest Lawn, Hollywood Hills.

PAUL HERRIN, 74, a retired engineering associate from Section 331, died Dec. 26.

Herrin worked at the Lab from 1957 to 1996. He is survived by his wife, Lois; sons Steven and David; grandchildren Robert, Anna and Kristie; and brother Richard.

Memorial services were held Jan. 8 at First Baptist Church in La Crescenta. Burial was at Forest Lawn, Hollywood Hills.

The following JPL employees retired in January:

Arthur Murphy Jr., 37 years, Section 1340; Robert Mackey, 36 years, Section 373C; Ching Leang, 30 years, Section 314C; Eleanor Manning, 30 years, Section 335J; Robert Warzynski, 27 years, Section 317G; Natividad Chavira, 24 years, Section 335J; Patricia Wieclawek, 22 years, Section 2243; Loring Craymer, 18 years, Section 313J; Michael Hooks, 17 years, Section 2732; Sandra Leslie, 13 years, Section 1122.

### **l**etters

I would like to thank the Lab for the very nice plant sent to me on the passing of my mother. I also want to express my sincere gratitude for all the love, support and gifts from my JPL family. It was a great comfort to have all of you be there for me. Thank you again.

Vena Pontiac

I would like to thank JPL for the lovely plant after the recent passing of my father. Your kind thoughts, prayers and cards are very much appreciated. Cynthia Cooper

I wish to thank my friends at JPL for all the prayers and kind words on the recent passing of my mother. My family and I thank you for the expressions of sympathy, flowers, cards and support. It was greatly appreciated. Lamont Martin and family

My husband and I would like to extend our heartfelt thanks to JPL for the beautiful azalea sent to us at the recent passing of his mother. The beautiful plant gives us comfort at this difficult time.

Magdalene and Ronald Chang

I would like to express my thanks to JPL and my friends in Quality Assurance for the support my family and I received following the unexpected death of my mother-in-law, Kathryn "Kit" Ludwig. The kind words and beautiful plant have been truly appreciated during this difficult time. Sincerely.

Lori Ludwig and family

### Classifieds

### For Sale

CHEST OF DRAWERS (3), pecan and walnut (probably), 51" H x 40" W x 19" D, \$100; EXERCISE MACHINE, Vasa swim trainer, almost new, \$350. 790-4206.

CIRQUE DU SOLEIL TICKETS (2), Quidam, in San Diego Feb. 11, 4 p.m., excellent seats Section 200, Row M, \$75.95/ea. 249-7342, Sherry or Jim.

COFFEE TABLE, Ikea, contemporary and large, wood frame with glass top and wheels, vg cond., \$50 (original price was \$250), e-mail

for picture. johnnytung@gmail.com COFFEE TABLE & 2 matching end tables white with glass tops, excellent cond., very cute and stylish, pictures available upon request, \$200/obo; CONSOLE TABLE, solid oak, excellent cond., European styling with brass handles, approx. 50"L x 18" W x 36" H, pics available upon request, \$100/obo. 626/744-0643 or sherieannabelle@yahoo.com.

CONCERT TICKETS, Coldplay at Arrowhead Pond, Feb. 6, concert is sold out, seats 439R 11/12/13, \$300/obo. 626/524-7853, Anthony Hernandez or anthonyhernandez@lmit.com DEHUMIDIFIER, 4 yrs. old, works great but no longer need, \$40/obo. 626/254-1523.

DESK: very nice executive office desk/workstation, curved L-shape/corner design, approx. 71" x 71" x 29", pull-out keyboard tray, 2 drawers (1 for files), cabinet with lock, curved shelves, cherry color with black top, can e-mail photos, \$125. budabonz@pacbell.net, 626/798-0329.

ENTERTAINMENT UNIT, like new, oak, for up to 32" TV, 72" h x 83" w x 20" d; glass doors with adjustable glass shelves, book shelves and enclosed cabinets; pick it up in Upland, will e-mail pictures on request; cost \$1,000 new in 2002, sell for \$450, 909/608-7834.

EXERCISE BALL, Thera-Band, 75 cm, brand new, blue, for body height 6'2"-6'8"; use for exercise, gym, balance, fitness, yoga, pilates, resistance and stability; \$25. 714/280-6488. EXERCISE MACHINE, Total Gym 11000 premier; incl. curl bench, pull-up bar, squat stand, dip bar, handle bar, swivel foot holder, weight bar, and wedge pillow accessories; rarely used, excellent for back therapy and general weight training; see at Totalgym.com (equivalent to model 14000); cost over \$2,000 orig. w/accessories, will sell for \$1,000/obo

FACSIMILE, Lanier LF215m, multifunctional, brand new, no box, won in raffle; faxing, laser printing, copying and color scanning; \$100/obo. 395-8179, erudnev@yahoo.com. FOOT MASSAGER by Brookstone, exc. condition, \$40. 626/398-4960.

FURNITURE: solid oak "Wambold," exc. cond., queen size bed headboard (64" W x 35" H x 14" D) with two built-in shelves w/doors, \$85; entertainment center w/2 glass doors and 4 shelves (48" W x 31" H x 17" D), \$115; dining table w/2" bull-nose edging (84" L x 42" W) with 4 chairs, \$495; pics avail. 805/490-5889. KEYBOARD, Yamaha electric, seldom used, great shape, full size, stand included, \$40. 714/996-9334.

MISC.: handbag, beautiful new, Kenneth Cole New York brown leather "fold still" large tote, retail price \$300, sell for \$100; Coach leather purse, black, new, retail price \$325, sell for \$150; sunglasses, women's Persol, black plastic frame, made in Italy, new, case included, paid \$130, sell for \$60; picture, Paradise Waterfall, 46" x 29," moving water & bird sounds (volume control), creates the illusion of moving water, paid \$250, sell for \$100.

MISC.: fax cartridge (model pc-102rf) for Brother machines, brand new, \$20; Jenny Craig diet tapes, set of 14, \$25; computer power control center, 5 power switches + 1 master switch, 5 surge-protected outlets + 2 modem/fax/phone jacks, new, \$20. 790-3899 MISC: Calvin Klein, down comforter, king size, very warm, used one season, \$50; Genesee Beer mirror wall hanging, 16 x 24, fair cond. \$10; "The Club" auto anti-theft device, \$5; portable stereo, 16 x 9 x 6, am/fm/cassette recorder/CD, uses batteries or a/c power, \$20. 626/584-1159, sierragal@gmail.com.

MISC: gray fabric high-back swivel desk chair. \$59; toddler bedframe (wood), looks like a red car, \$39; antique round marble-top end table, \$39; electric water cooler dispenser, \$39; Apple laser toner cartridges, m1960g/a & m2045g/a, sealed, \$39/each; donut spare tire/ wheel - t105 80d-13, used once, \$29; wireless intercom set \$29; tray tables set, blonde wood \$17; Pierre Cardin tweed 3-pc. luggage set \$15; large framed prints, call for description 626/798-4510.

MODEL TRAIN, Lionel, HO scale, slot car (Aurora vibrator) and Disneyland monorail with vintage '60s train table, 4 x 8 ft., make offer.

951-5952. Dave. MOUNTAIN BIKE, 2003 Cove Spot, nickel color, small (16" frame), 27-spd Shimano components, complete Race Face set up, 6" Hayes hydraulic disc brakes, Marzocchi DJ1 5.5" of front travel, 5th Element rear suspension 6" travel, includes 2 sets of tire sizes, 2.4 and 2.5, e-mail mtbiker\_s@hotmail.com for pictures, \$1,600/obo. 626/794-0312, Carlo. MOVING SALE: mattress, Springair queen size with frame, \$200; contemporary dining set table + 8 chairs + buffet, see picture at http://www.easylifefurniture.com/diningrooms/ bayheights\_dr.html, \$750; all items bought 2 vrs. ago but hardly used, 310/543-8878. MUSICAL INSTRUMENTS: Casio CZ 5000, 61 keys, volume pedal, 15-foot line-out cable, soft case, barely used, \$200/obo; Fender std. precision bass, black, original Fender hardshell case, 3" leather shoulder strap, barely used. \$500/obo; Carlos acoustic guitar, built-in pickup volume and brightness control line-out cable, hard case, free with the set (keyboard + bass), \$50 otherwise, 626/744-0460

OPERA TICKETS (2), Los Angeles Opera, Madama Butterfly, Feb. 4, 7:30 p.m., Dorothy Chandler Pavilion: seats U9 & U10, orchestra ring section bordering main orchestra, great view and good acoustics; these are my own season tickets but am unable to attend; face value \$190 for both tickets, sell for \$120. 626/791-7219, Khee, evenings, 626/616-5034(cell), KheeChan@earthlink.net

ORGAN, Yamaha 415 electronic console w/13 pedals, 3 keyboards, 144 rhythm patterns, pd. \$7,500, sacrifice for \$2,000. 790-3899.

ORIENTAL RUG, approx. 12 x 15 ft., excellent cond., cream base with red and brown inlaid design, pictures avail. upon request, \$200/obo. 626/744-0643 or sherieannabelle@yahoo.com. PERIODICAL, Griffith Observer, 28 issues from 1989-91, \$7. 989-1388.

PERSIAN RUGS, handmade in Iran, various sizes and designs; many are pure silk, some are wool and blend; must sell, make offer for any or all. 790-2179.

PHOTO PRINTER, new Canon, box never opened, \$40. 626/359-7666.

PIANO, Everett console, perfect condition, keyboard looks brand new, light wood, beautiful

tone, \$1,000. 626/359-1789. PRINTER, Epson C88 inkjet, unopened, \$60. 661/297-8533.

REFRIGERATOR, Kitchenaid stainless steel, top freezer, 21.6 cubic ft., model ktrc22khmss only 3 yrs. old. \$700, 310/543-8878.

SKIS, 170 centimeter Rossignol Equipe straight cut w/Salomon 626 bindings, good cond., \$45/obo. 626/304-0737.

STEREO SPEAKERS, Infinity RSb, 3 way,  $10^{\circ}$  woofer, floor-standing or bookshelf, \$100 for pair. 951-5952, Dave. TROPICAL PLANTS, plumerias, variety of

colors and sizes; shell gingers. 626/444-6156 TUXEDO, Chinese style, black, jacket size R38, pants waist size 32, never worn, comes with hanger and garment bag, \$200 retail, sell for \$75. 626/584-1159, sierragal@gmail.com.

YARD SALE, multi-family: Saturday, Feb. 11, 9 a.m.-3 p.m., 1758 Oakwood St., Pasadena (cross street Allen); last planned yard sale was cancelled due to rain; furniture, tools, books, white elephants, jewelry, clothing, stereo speakers; we'll have it all.

### **Vehicles / Accessories**

'91 ACURA Integra RS, red, 98K mi, 5 speed, exc. cond., moon roof, reliable, service records available, \$3,000/obo. 626/359-1789.

'87 ACURA Integra LS, mint cond. (garaged), orig. owner, 113,200 orig. miles, new CD/ stereo w/4 speakers, new ignition kill alarm/ battery/oxygen sensor (smog test)/hoses/ belts/radiator/oil pan/gaskets/timing belt/ alternator, fanatically maintained, rebuilt auto. trans., silver w/charcoal gray/black interior, a/c. 27 mpg, not a spot of oil underneath the parking space, a medical disability forces me to sell my 'baby,' \$2,750. 980-2091, Jibralta, before 8 p.m.

'01 BMW X5 4.4I, silver exterior/black leather interior, loaded sport & premium package, auto, 6-CD changer, GPS nav., all power, memory seats, moon roof, premium wheels, phone setup, 83K miles, exc. cond., 2nd owner, \$30K/ obo. 626/375-3935, Maria.

'01 CHEVY Suburban LT, black, leather interior, 31,125 miles, exc. cond., \$24,000/obo. 626/794-0312.

CHEVY S10 truck (swirl) chrome wheels (4) and P235/60R 15 Cooper Cobra tires, \$500. 626/359-7666.

'64 DODGE Dart 270 Classic (Dodge 50th anniv. year), exc. cond., 4 dr., gold, auto trans pwr. steering, slant 6, new tires, 140,700 mi. (70,000 on rebuilt motor; 15,893 at purchase in 1965), have all maint. receipts + owner's manual, \$2,900/obo. 626/449-6698, Kathie

'02 FORD Escape XLS, 5-speed manual, a/c, roof rack, 53K mi., white, new tires/brakes, vg cond., 100% dealer servicing, \$8,950 (below Blue Book value). 626/836-6729, eves/weekends, Tim.

'95 GEO Prizm, very clean, good condition, very minor leaking, bought in 1997 with salvage title, never had any trouble, bought a new car, \$1,700/obo. 626/791-9530.

'99 HONDA Odyssey van, original owner, Mesa Gold & tan, 3.5 V6 V-Tech engine, rebuilt automatic transmission w/2-year national warrantee, major maintenance just done w/timing belt, ABS, power, 6 CD am/fm cassette, front rear a/c, good tires, CIII tow bar; great family van, faithfully maintained for 120,000 miles; \$9,750/obo. 434-8795, Steve

'97 HONDA CR-V LX, blue, 149,000 mi., top condition, excellent value, 1 owner; garage kept, clean, interior like new; engine fully over-hauled to prep for sale, brand new timing belt and radiator; deluxe wheels, luggage rack; reli-able as a Honda with 10 years more life at least, \$7.995, 626/622-4141, Joey

'95 LAND ROVER Range Rover SE V8 4.0 L, auto, 4WD, 138K, tan, leather seats, CD, ps pw, dual airbags, moonroof, runs great, good condition, \$5,800/obo. 626/296-9073 or 818/515-2461.

LEASE TAKE-OVER, for the rest of the lease term, preferably 22 months or less left on it. open to all cars. poseidon\_308@yahoo.com. '04 NISSAN 350Z, black, 22,100 miles, automatic transmission, excellent cond., under factory warranty, \$30,000/obo. 562/261-3585. RIMS & TIRES, 2006 F-150 Lariet, set of 4 BF Goodrich all-terrain tires, 265/60R18; stock polished aluminum 18-inch rims; practically new, only 350 miles on them; sold as set of 4, \$750/set. 626/379-7389, Juan.

TIRES AND WHEELS for Subaru WRX, 16" alloy with Bridgestone Potenza (RE92), allseason high performance tires (R205/55R16); neither wheels, nor tires have ever been used: this was the standard wheel/tire package for the WRX up until the 2005 model year; pick up in Arcadia; \$900 for the set of 4. 626/446-6751, leave voice mail.

'00 TOYOTA 4Runner, 4-cyl. 2.7 L, 5-speed manual, 2WD, 100,000 miles, a/c, AM/FM/cass/CD, ABS (4-wheel), privacy glass, running boards, good condition, \$8,000. gaby@ipac caltech.edu, 626/578-9720.

'91 TOYOTA Odyssey RV, 16 mpg, 54K miles, roomiest interior floorplan, rear bath with fiberglass shower, microwave, new jumbo fridge, big closet & slide-out vertical pantry, roof air, alarm, sparkling new exterior stripes furnished with linens, utensils & RV supplies. new Toyota engine has only 1K miles and warranty, a rare turnkey rig, see photos at http:// tinyurl.com/83gsu, \$16,950. 626/798-4510 '02 VW Jetta, 4-cyl. 1.8L turbo with Tiptronic 5-speed automatic transmission, silver with gray interior, leather seats, anti-theft alarm system, moon roof; sport package: premium (17" alloy) wheels and sport suspension; good condition, approx. 39.6K miles, clean title recently serviced. 310/909-9339, Tom.

#### Wanted

LAPTOP COMPUTER, in good working cond. 626/821-0224, Stan.

MATH TUTOR, jr. & sr. high school level classes (geometry, pre-algebra, algebra I & II, SAT math, etc.), eves and/or weekends; also English tutors, 888/784-1639, David, leave msg. SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. mrayman@alumni.princeton.edu, 790-8523, Marc Rayman.

#### **Free**

SCOTTISH COUNTRY DANCING, Monday nights 6 to 8 p.m. throughout Caltech academic year, upstairs in Winnett Center, see caltech.edu/map, no experience or partner required, beginners welcome anytime. maiolo@caltech.edu, Jim.

### **For Rent**

ALTADENA, comprehensively furnished extended-stay sabbatical house: 3 bd., study, boundary Angeles Nat'l Forest, 3 mi. from JPL, trail access, view, fireplace, oak floors, antiques; furniture, beds, dinnerware/utensils, pots/pans all linens & towels, fine soaps, necessities included; just bring toothbrush & clothes; TV/DVD/VHS, Dish satellite, wireless DSL; garden, fruit trees, patio, garage; private, immaculate; avail. February. 626/798-3235.

ALTADENA, fully furn, 1 bd., 1 ba, guest house, ideal for 1 person; hardwood floors TV/DVD/CD, dinnerware, utensils, pots/pans bed linens & towels; utilities included (electrical, gas, water and trash); street parking, no smoking, no pets; month-to-month lease, \$1,200. 626/791-0317.

ARCADIA apt., 2 bd. + 2 ba., garage, a/c, stove, new paint, and some remodeling, convenient location, walking distance to shops and food court, near JPL/Caltech, SA mall and 10/210 fwys., no pets, \$1,599. 626/576-7333. ARCADIA, attention short-term visitors or transitional home hunters; 2 bd., 2 ba. condo; 100% furnished including DSL, phone and kitchen utensils; available around May 1 for 2-3 mo., scenic location on West Huntington Drive near major shopping centers, minutes from Caltech and JPL; \$1,500 including all utilities. 626/821-0925 or 626/379-4707.

LA CANADA studio guest house, kitchenette, storage shed, patio, park-like yard; includes utilities, satellite TV, recently updated; no pets/smoking, single quiet person; \$1,050 790-6738.

LA CRESCENTA, Upper Briggs Terrace, 2 bd. + large loft, 1.5 ba., incredible views from this canyon rim home, 2-car garage, large land, isolated and quiet, deer and critters, 15 min. to JPL, new kitchen with top-of-the-line appliances, washer and drver hookups, hot tub. central air and heating, \$2,750. 653-9159.

LONG BEACH, 3 bd, 1.75 ba. house in the desirable quiet Plaza neighborhood, 2-car garage, front and back yard, no pets/no smoking, \$1,600. 562/420-2313.

PASADENA, Caltech's Health Educator seeks non-smoking, cat-friendly roommate to share 2 bd., 2 ba. condo 2 blocks from campus; furnished bedroom/private bath available fully equipped kitchen, large patio, central air/heat, lots of closet space, laundry in unit, terrific location; available Feb. 1; 1-yr. lease; \$850 + 1-mo. sec. deposit. jcurtis@studaff.caltech.edu, Jane, 626/833-2961.

PASADENA, beautiful 3 bd., 2 ba. home in Upper Hastings Ranch, new kitchen & baths, central heating & air, hardwood floors, pool, cov. patio & wet bar, 2-car garage, tropical land-scaping, gard. & pool serv. included, \$3,000 + sec. dep., avail 2/1. bettyrs@earthlink.net.

### **Real Estate**

DEL MAR timeshare condo, 2 bd., 2 ba., living room, fully equipped kitchen, pool, Jacuzzi, BBQ area, game room, walk to beach; high season, 1 week, \$4,000. 626/507-8083, David, or 626/215-3323, Kitty.

PASADENA townhouse, 2-story, quiet end unit move-in condition, private 2-car attached garage w/washer and dryer hookups, ample wooden storage cabinets in the garage, 2 bd., 2.5 ba., Pergo hardwood flooring downstairs, dining room with wet bar, formal living room w/fireplace and secluded balcony, 2 spacious bdrms, each w/private bathrooms & walk-in closets, \$450K. 818/468-6868, 626/204-1354.

### Vacation Rentals

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, beautiful master bd. suite sleens 6 949/786-6548

FLORIDA condo, beautifully furn. 2 bd., 2 ba. 2nd floor, on the surf of New Smyrna Beach, half-hour to Cape Canaveral, 90 min, to Disney World; enjoy all the comforts of home, quiet, relaxing, overlooks beach, BBQ/pool/game room, easy walk to stores and restaurants 760/439-7821, Darlene, dfhauge@yahoo.com. GRAND TETON / YELLOWSTONE Nat'l Parks. visit in style, 2 bd. + loft townhome, totally outfitted, stunning Teton view, sleeps 6. cable. microwave, etc., borders Grand Teton. conniematt@sbcglobal.net.

HAWAII, Maui condo, NW coast, oceanfront view, 25 ft. fr. surf, 1 bd w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps 4, laundry fac., \$145/nite/2, \$20/nite/add'l person. 949/348-8047, jackandrandy@cox.net

MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitchen incl. microwv. D/W, cable TV, VCR, phone, balcony w/mtn. vw., Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc'nt. 626/798-9222, 626/794-0455 or valeriee@caltech.edu.

MAMMOTH, Meadow Ridge, 2 bd., 2 ba., + loft sleeps 8, great family unit & location, walking dist. to Eagle Lodge; fully equipped kitchen: microwave, new dishwasher, new oven; cable TVs, VCR, DVD, CD/cass, stereo, free wireless internet access; close to pool, Jacz., spa; JPL discount. 240-9763 or anahid@KazEng.com. OCEANSIDE condo, on the sand, charming 1 bd., panoramic view, walk to pier or harbo pool, spa, game rm., sleeps 4. 949/786-6548. ROSARITO BEACH condo. 2 bd., 2 ba., ocean view, pool, tennis, short walk to ocean on private rd., 18-hole golf course 6 mi. away, private secure parking. 626/794-3906.