

A whole new world

JPL's Buratti exploring Pluto with the New Horizons team | **By Mark Whalen**



In 1965, 13-year-old Bonnie Buratti already had a passion for astronomy. She had acquired a telescope to see the moon and planets close up. She read everything she could and followed JPL's missions closely.

So Buratti was intensely interested when she watched TV coverage of Mariner 4's flyby of Mars in July of that year. "I remember sitting in my living room, feeling so disappointed when I saw these images of a moon-like surface with craters!" she said. "At the time, scientists were doing

experiments showing that terrestrial life forms could live under Mars-like conditions. I thought there might be life, and maybe even canals."

Nearly exactly 50 years later, Buratti—now a principal scientist at JPL—expects a happier reaction when she gets a historic first look at another world as a member of the science team for NASA's New Horizons spacecraft, which will fly by Pluto on July 14.

Launched in 2006, the Johns Hopkins University Applied Physics Lab-

oratory-managed New Horizons has spent years en route to the dwarf planet that's never been visited by any spacecraft.

"Mariner 4 taught me that science is ever evolving," said Buratti. "This is what we're facing now [with Pluto]. We have a vision of Pluto, but we just don't know what we're going to see." She is looking forward to assessing Pluto's surface—its texture and roughness. "If you were standing there," she asked, "what would it look like?"

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“Another thing I’m interested in is whether or not Pluto has seasons like Earth; we think it does,” said Buratti. “Pluto is tilted big time, so we think that the polar caps, if it does have them, move back and forth.” She is also looking forward to a possible extension of the New Horizons mission to visit another object scientists have identified in the Kuiper Belt—a region of icy bodies, including Pluto, beyond the orbit of Neptune. The extended mission is expected to begin in 2018.

Buratti’s career in planetary science took root in college, when she had the support of major players in the field. Famed Cornell University astronomer Carl Sagan was her adviser. Also,

her Ph.D. thesis was under Cornell astronomy professor Joe Veverka, who later turned out to be principal investigator for JPL’s Stardust-NExT mission. She has spent the past three decades at JPL working on missions such as Voyager, Deep Space 1, Cassini and Dawn. She is now supervisor of the Asteroids, Comets and Satellites Group.

“From my background as an astronomer, the most exciting thing is whenever you are approaching an object you’ve been seeing as a pinpoint of light forever, and then see it get bigger and bigger as a geologic world,” she said.

Buratti expects some of what her team sees at Pluto to be reminiscent of Voyager 2’s flyby of Neptune’s

moon Triton. She recently was lead author on a paper that predicted Triton-like plumes and an eroding polar cap at Pluto.

“Triton is kind of a twin of Pluto,” she said. “It’s about the same distance from Earth, it’s the same size, has seasonal volatile transport and it’s tilted.” The difference is that Pluto is brighter and looks like it has bright patches. “So we know it’s going to be different in some way. It’s all speculation at this point.”

JPL’s Solar System Dynamics Group has also provided navigation support to New Horizons, and the JPL-managed Deep Space Network is providing the communications link.

For more information, see <http://www.nasa.gov/newhorizons>. ■

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Bonnie Buratti

A July 3 color version of Pluto by New Horizons’ Long Range Reconnaissance Imager.





The Los Angeles Youth Orchestra performed at JPL June 15.

Sweet is the sound

Norton's kids bring him back to his beloved music | By Mark Whalen

Many engineers and scientists have a special affinity for music, and nowhere is this more evident than at JPL, where staff regularly join groups ranging from big bands and chorales to folk or blues ensembles. To that list can be added one more: Charles Norton.

Norton, a JPL strategic planner, recently had a chance to share his pride and passion with the Lab that was music to his ears. In June, Norton hosted an on-Lab concert by the Los Angeles Youth Orchestra, which featured talented students in middle and high school. His 12-year-old daughter, Katherine, an oboist, was among the performers.

Some NASA-flavored serendipity helped the performance come about.

Russell Steinberg, conductor of the youth group, had composed “Cosmic Dust,” a work inspired by Hubble Space Telescope imagery that premiered in April at Johns Hopkins University in Baltimore. Among those in attendance was NASA Associate Administrator John Grunsfeld, as part of Hubble’s 25th anniversary cel-

bration.

“It was very well accepted there, and it was suggested since the composer/conductor was with the L.A. Youth Orchestra they ought to do a performance at JPL,” said Norton, a program manager associate for NASA’s Earth Science Technology Office. “It was complex to bring a symphony orchestra here, but JPL was extremely receptive to make it happen.”

As a youth, Norton played with orchestras himself, primarily in and around his native Long Island, NY. “I was quite serious on the bassoon and I had very fine teachers,” he said. “When I was graduating high school, I was given the opportunity to audition to become a principal with the New York Philharmonic.

“Those opportunities only come once every 40 years,” he chuckled.

Fortunately, Norton was interested in other academic pursuits as well. “Back then, in the mid-80s, it was not financially stable to make a career as a musician. So instead, I decided to go to Princeton and study engineering—and never pursued

the audition.”

But he continued playing regularly, including performances with the Caltech/Occidental Orchestra after he joined JPL in 1998. He also substituted for other groups, such as the Santa Monica Symphony.

But then his children were born.

“I actually stopped playing once my first daughter, Katherine, was born in 2002,” said Norton. “I had no time for music.”

But as time passed, his daughters caught on too. Both Katherine and her younger sister Alison started on piano when they were 4 years old.

Now, Katherine, an 8th grader at Huntington Middle School, plays oboe for the school wind ensemble. Katherine’s teacher, Marion Kuscyk, who is also associate principal oboist of the L.A. Philharmonic Orchestra, referred her to an audition for the L.A. Youth Orchestra, which is an extra, out-of-school activity.

Norton said he hadn’t foreseen playing symphony orchestra concerts with his daughter, but on occasion he sits in

Norton sees a natural synergy between musicians and technical professionals such as engineers and scientists. “It’s the way that a concept—both technically and artistically—emerges from its beginnings and is matured and developed over time.”

on rehearsals and fills in as a guest performer. To stay on beat, he plans to join the Caltech/Occidental Symphony again this fall.

Norton, who plays a key role in organizing JPL’s cubesat program of miniature satellites, sees a natural synergy between musicians and technical professionals such as engineers and scientists.

“It’s the way that a concept—both technically and artistically—emerges from its beginnings and is matured and developed over time,” he said. “I think the synergy is one of creativity, challenges and a respect for history. I find it amazing that as a concert musician, I can perform work that others had performed centuries ago, and that material remains as fresh and exciting and vigorous today as it was then.”

Norton compares maintaining his musical abilities to keeping his technical abilities up to date. “Performing your technical work on a daily basis helps you mature your capability; this requires training and a certain level of dedication. To work at the highest level in both disciplines, you can have some natural ability, but you also have to put the time in to continue to mature.” ■



Oboist Katherine Norton and her dad, bassoonist Charles Norton.

Naderi honored by Carnegie

JPL Director for Solar System Exploration Firouz Naderi has been named among the 2015 "Great Immigrants" by Carnegie Corporation of New York, a philanthropic trust.



Firouz Naderi

Carnegie's 2015 "Great Immigrants: The Pride of America" initiative includes 38 people who have helped advance and enlighten American society, culture and economy. The 38 Great Immigrants honored this year come from more than 30 countries and represent leadership in a wide range of professions.

Naderi, a native of Iran, joined JPL in 1979. Prior to his current position, he was associate director for Project Formulation and Strategy (2005-11), providing oversight of new business acquisition and strategic planning at JPL. Previously, he led the Mars Exploration Program (2000-05) and the Origins Program (1996-2000).

For more information on the honor, please visit <http://greatimmigrants.carnegie.org>.

Holm receives tech honor

Jeanne Holm, chief knowledge architect in the Information and Engineering Technology Planning and Development Division, has been honored as one of the Top 50 Women in Tech by fedscoop.com, a website covering government information-technology news.



Jeanne Holm

The list recognized "women whose vibrant energy, determination and imagination are making a monumental difference in the federal government IT community, and whose impact is being felt across America."

Holm recently returned to JPL after four years as an evangelist for Data.Gov, an open-government project for the White House.

Cryogenics honor for Ross

For his contributions to the field of cryogenics, JPL principal engineer Ron Ross has been named a fellow of the Cryogenic Society of America.

Ross has been with JPL since 1968. He has been a multi-discipline technical manager and project engineer specializing in transitioning emerging technologies into high-reliability end products. He has earned NASA's Exceptional Service Medal and Medal for Exceptional Engineering Achievement, as well as JPL's Technology and Applications Programs Exceptional Service Award.

Ross accepted the cryogenics honor at the joint Cryogenic Engineering Conference and International Cryogenic Materials Conference July 1 in Tuscon, Ariz.

Letters

I would like to thank my fellow co-workers (and friends) for the card and live plant for the passing of my mother, Ingeborg Hilde White. Your support and condolences to our family meant a great deal to us. She sent her name on various missions through the years and always watched with pride our JPL achievements. A wonderful mother, and a great space fan, she will be missed. Thank you again.

Charles P. White

Retirees

The following employees retired in May:

Helmut Partma, 46 years, Section 5000; **Raymond Frauenholz**, 44 years, Section 392C; **Susan Linick**, 43 years, Section 398A; **Glenn Macala**, 36 years, Section 3443; **James Marr IV**, 31 years, Section 7000; **Patrick Kleinhammer**, 23 years, Section 1780; **Kimberly Shepard**, 22 years, Section 1724.

The following employees retired in June:

Matthew Landano, 45 years, Section 1000; **Gajanana Birur**, 41 years, Section 353L; **William Blume**, 38 years, Section 394A; **Robert Preston**, 36 years, Section 3300.

Passings

Antal (Tony) Bejczy, 85, a retired robotics engineer, died June 25.

Bejczy joined the Lab in 1969 and retired in 2001. He pioneered the development of innovative robot components such as "smart hands" with "smart sensors" and a novel telerobotic system using a force-reflecting hand controller for remote robot arm control. He also developed prototypes aimed at achieving full telepresence in space and under sea.

While at JPL, Bejczy was awarded 43 NASA innovation awards and seven U.S. patents. His NASA awards include the Exceptional Service Medal and Group Achievement Award (both in 1994). In his honor the Antal Bejczy Center for Intelligent Robotics was inaugurated in January 2015 at the University of Óbuda in Budapest.

Bejczy is survived by his wife, Margit (Margo). A memorial service will be held July 11 at 12:30 p.m. at St. Stephen Catholic Church, 3705 Woodlawn Ave., Los Angeles, 90011. In lieu of flowers, donations are requested to saintstephencatholic.org or the Hungarian Scouts Association (32316 Phantom Drive, Rancho Palos Verdes, CA 90275).



Tony Bejczy

Classifieds

Ads submitted June 27–July 3. To submit an ad, e-mail universe@jpl.nasa.gov.

For Sale

GAMES: Harvard dual play hockey/pool flip table, 84" by 48", all accessories, \$125, Sportcraft foosball table, 56" by 30", \$60. dhoppe803@gmail.com, 818-351-6199.

MISC.: Pedometer, mini steam iron, Rollerblades (men's 8), head/neck/shoulder massager, walkie talkies, Blackberry Curve, soft cooler, bloody Mary/decanter set. 818-272-3262.

MTN. BIKE, Gary Fisher 26," blue, used-to-good cond., price negotiable. 626-376-6374, David.

Vehicles / Accessories

'78 HONDA Cb 750 K8 motorcycle, everything but the frame; California Highway Patrol found the frame to have no serial-stamped VIN on the left side of the steering tube during registration/inspection; no, the frame is not stolen; I registered the bike in New Mexico and the previous owner had it registered in Ariz.; price negotiable. Enrique Garza, 626-404-6573, a1cgarza@yahoo.com.

Wanted

SPACE INFO/memorabilia from U.S. & other countries, past & present, for personal use (see <http://www.youtube.com/watch?v=S7PvGp7mCU>). mrayman@alumni.princeton.edu, 818-790-8523, Marc Rayman.

Lost & Found

LOST: activity notes, April 2006–March 2007. SOSNotez@riseup.net.

Real Estate for Sale

LEBEC-area mountaintop retreat, spectacular views, 4 br./2 ba., 3,210 sq. ft. custom-built house on 20 acres, surrounded by vast fields of wildflowers in spring, but stunning year-round; only about an hour from JPL north on I-5; includes spacious workshop or artist's studio; see <http://www.tourfactory.com/idxr1308594>; \$599,000. 805-358-1626 or Robert.A.Preston@icloud.com.

For Rent

ALTADENA, two rooms in a lovely house, close to Lab; 4-bd./2-bath with a large park-like shaded backyard; other folks in the house are a JPLer and preschool-age child; shared bathroom with spacious storage, shared kitchen and laundry; 5-minute drive to JPL or easy bike ride, close to public transportation; each room: \$700 furnished, \$650 not furnished, including utilities; one available Aug. 1, the other available Aug. 15. louise@louiseh.org.

ALTADENA, furnished room w/view for lease; non-smoker to share a 4-bedroom, 3-bath house; close to local colleges/Pasadena schools, walking distance to JPL; utilities are included, central air/heat, Internet access; near 210/134/110 freeways, bus stop, shopping, banking, entertainment and restaurants; must see; \$740/month. 818-370-0601.

ALTADENA apt., ground floor, appliances optional, freshly painted, 2 bdms, 1 bath, fireplace, gd. size closets & bdms., carpeting TBD, tile in kitchen & bath, miniblinds throughout, carport parking, storage, laundry on site; close to JPL/Odyssey Charter School/bus/grocery stores/shops/pharmacy/24-Hour Fitness/bank, clean; option: \$700 shared rooms or \$1,350 rent entire apt. 818-370-0601.

ALTADENA, one room in a lovely 3-bd./2-bath house, big backyard, hardwood floor, big closet, furnished or unfurn., shared bathroom, kitchen and laundry privileges; 5-min. drive to JPL, close to public transport; short- or long-term lease; must like dogs and be very clean; \$750 furn., \$700 not furn., including util. + \$650 deposit. 626-712-3451.

PASADENA, 6-mo. lease from July 2015 to Feb. 2016; near JPL/freeways/bus/grocery stores/24 Hour Fitness; fully furnished 2-bdrm., 1-bath single-family home; dining rm., kitchen nook, microwave, dishwasher, refrigerator & stove; laundry rm. with washer/dryer; fenced front & back yards; long driveway for RVs, 1-car detached garage w/citrus tree; no smoking, no pets; \$1,675 move in + \$1,675/mo. 626-794-1917, Mon.-Fri. noon-3 p.m.

SIERRA MADRE, quiet, private detached 1 bdrm./1 bath, has its own address, old house w/driveway, patio; renovated, furn., new wood floor/window a/c/heater/ microwave, washer, dryer, refrig., stove, tables, sofa, chairs, 50" TV, queen bed; water, trash paid; walking dist. to Sierra Madre downtown, bus to JPL; text e-mail address for pictures; \$1,350/mo. + deposit. 909-634-0528, Sue.

Vacation Rentals

BIG BEAR lakefront, luxury townhome, 2 decks, tennis, pool/spa, beautiful master bedroom suite. 949-786-6548.

CABO SAN LUCAS, Christmas/New Year's weeks (12/19/15–1/2/16), spectacular property, lg. 2-rm. ground floor unit, garden view, sleeps 6, full kitchen, 2 baths, daily maid, use of all Sheraton facilities; pictures: <http://haciendadelmar.com.mx/sites/en/suites/master-suite>; \$1,400/wk. tujungadude@gmail.com or 818-605-0415.

JACKSON HOLE, WY: Luxurious bed and breakfast on 3 acres of solitude on Snake River and near Jackson Hole Mountain Resort and south entrance to Grand Teton Natl. Park; see <http://www.bentwoodinn.com/>; mention JPL for discount. info@bentwoodinn.com, 307-739-1411.

KAUAI condo, Pacific Fantasy, Kapaa: 1 bedroom (sleeps 4), \$950 per week. 818-272-3262.

MAMMOTH, Snowcreek, 2 bd., 2 ba. + loft, sleeps 6-8, fully equip'd kitchen incl. microwave, D/W, cable TV, VCR, phone, balcony w/mtn. vw., Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL discount, no pets. 626-798-9222, 626-794-0455 or valeriee@caltech.edu.

MAMMOTH, Snowcreek, beautiful updated condo, 2 bd., 2 ba. + loft (sleeps 6-8), great location by pond/meadow, new appliances, TVs, DVD players, free wireless Internet and washer/dryer, no pets. 818-952-2696 or BigMtnPrettySky@gmail.com.

OCEANSIDE condo, on the sand, watch the beautiful sunsets, charming, 1 bedroom, panoramic view, walk to pier or harbor, pool/spa, game room, sleeps 4 max, all amenities. 949-786-6548.

OCEANSIDE whitewater view beach condo; virtual tour: <http://www.previewfirst.com/mls/33034>; 2 bd., 2 ba., sleeps 6; boogie boards, wet suits, full kitchen, all linens, beach towels; Wi-Fi ready, new flat-screen TVs, daily paper, grocery stores; 2-min. walk to sand, no roads; JPL/Caltech rates: summer \$2,150/week; monthly and nightly rates available; see www.warmfocus.com/video/k/1402-999_npacificstc213/video.php; reserve w/\$500 deposit. 760-433-4459, Grace; 831-425-5114, Ginger. ■



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