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The Launch

Pictured Discovery Release No. 68-88

Former WNCC Student Shoots for the Stars

CARSON CITY -- The first time Amanda Heidermann met Western Nevada Community College Professor of Physics Robert Collier, she told him that she wanted to become an astronomer. Collier says now that he was surprised and a little skeptical at the time.

But Heidermann, a Carson City native and Carson High School graduate, was true to her word and her dream. She completed her coursework at WNCC, transferred to the University of California-Berkeley and graduated with a degree in astrophysics, and has now been accepted to the University of Texas graduate school. Today, she is well on her way to becoming a full-time astronomer.

"Robert and the people at WNCC helped me a lot through a lot of challenges," Heidermann said. "You don't have to be a perfect student; you just have to put your mind to it and you'll be successful."

At WNCC, Heidermann earned a nearly perfect 3.95 grade point average, served as a senator for the United Students Association, and was a member of the first Western Nevada Astronomical Society committee. She first met Collier at a college career fair, where her goal was to introduce herself to a physics instructor.

"Robert gave me a book and we went to his office and talked," she said. "He later became my mentor and inspired me all the time."

Heidermann said Chemistry Professor Mike Sady and Mathematics Professor Ed Kingham were also big influences. "I realize now that teaching and mentoring students is very important," she said.

After earning her doctorate, Heidermann plans to become an instructor or join a research institute. For the past year, she has worked at the University of Virginia National Radio Observatory in Charlottesville, Va. This fall, she will research with data on galaxy clusters received from NASA's Hubble Space Telescope.

"The Milky Way is a little bit too close to home for me," Heidermann said, smiling. " Extragalactic astronomy is my absolute favorite. At the University of Texas, I will be doing research right away, which is unusual. The focus is usually on classes."

Collier asked Heidermann to work for him this summer at WNCC's Jack C. Davis Observatory. She is assisting with the weekly Star Parties which are open to the public every Saturday after dusk. Visitors look through a number of different telescopes and discuss the night sky.

"Now the tables are turned. I am now doing the teaching," Heidermann said.

Former Western Nevada Community College student Amanda Heidermann stands next to the sandstone sculpture of Saturn on the college's Planetary Walkway that connects the main campus to the Jack C. Davis Observatory.

UNLV
UNIVERSITY OF NEVADA LAS VEGAS

What happens in Las Vegas, happens at UNLV

UNLV Biology Professor receives prestigious award from the National Science Foundation

The National Science Foundation (NSF) has selected UNLV biology professor Brian Hedlund as the recipient of a 2006 Early Career Development Award, the most prestigious honor given to young faculty by the foundation.

The award recognizes and supports the early career development activities of teacher-scholars who are considered most likely to become academic leaders of the 21st century. The five-year $841,632 grant was awarded to Hedlund for his research on microorganisms thrive in hot springs located in the Great Basin of Nevada.

Dr. Hedlund has been involved with Nevada's NASA EPSCoR Astrobiology programs for several years.

Astronomy Graduate Program Approved By Board of Regents

The graduate program in Astronomy will officially start in the fall of 2007. In addition the Physics department will change its name to the Department of Physics and Astronomy.

NASA's Science Mission Directorate (SMD) sponsored a workshop on Laboratory Astrophysics that was held at UNLV on February 14-16, 2006. The workshop brought together producers and users of laboratory astrophysics data to discuss future NASA missions. The proceedings are edited by P. Weck, V.H.S. Kwong (UNLV) and Farid Salama (NASA Ames Research Center).

Science Magazine Ranks NASA SWIFT Satellite Result in Top Ten Science Breakthroughs of the Year.

Every year Science magazine chooses the top ten science breakthroughs of the year. Ranked at number four this year is a discovery by scientists working on the SWIFT Satellite science team. By combining optical and gamma-ray observations they have shown that short gamma-ray bursts are hosted by elliptical galaxies between two and six billion light years away and seem to come from an old population of stellar objects. This suggests that the bursts are produced by merger events of binary neutron stars. UNLV astrophysicist Bing Zhang is a member of the SWIFT science team that produced this result.

Ken Nagamine Joins UNLV's Physics Department

Kentaro Nagamine, Ph.D., joins the physics department as an assistant professor. His academic training includes degrees from the University of Tokyo, Physics, B.S., 1996; and Princeton University, Physics, M.A., 1998, and Physics, Ph.D., 2001. Nagamine's professional experience includes appointments as Postdoctoral Fellow, UC San Diego, CASS, 2004-August, 2006; Postdoctoral Fellow, Harvard-Smithsonian Center for Astrophysics, Theory Group, 2001-2004; Research Assistant, Princeton University Observatory, 1999-2001; Teaching Assistant, Princeton University, Physics Department, 1998-2000; and Research Assistant, Princeton University, Physics Department, 1996-1998 (Participated in the Borexino experiment, neutrino detector project in Italy). His research interests include: Galaxy formation and evolution at z=0-10; Numerical simulations of galaxy formation with hydrodynamics; and Cosmic star formation history & stellar mass density. In particular, he works on numerical simulations of the Universe, and compares the simulated universe with current and future observations.

Welcome Ken!

UNLV is a premier metropolitan research university. UNLV demonstrates how the traditional values of higher education can be adapted to conditions and needs of individuals and communities in the 21st century. The university concentrates its resources on instructional and research programs that are student-centered, demonstrably excellent, and responsive to the needs of local, regional, national, and international communities.
Visit *www.unlv.edu*

Reaching Beyond UNR

University of Nevada, Reno
Statewide • Worldwide

NevadaSat: ARLISS competition

NevadaSat is a Space Grant workforce development program in which students study and develop complex aerospace systems based on autonomous satellites and robotics. A Rocket Launch for International Student Satellites (ARLISS) has been a major focus of NevadaSat since 2002.

2006 ARLISS team (left to right): Jeffrey LaCombe, Pablo Rivera, Palkin Zed, Travis Fields and Guillermo Larios. Not pictured: Eric Wang and Monica Nicolescu

Each fall, schools meet in the Black Rock Desert (in Northern Nevada) for the competition, where soda-can sized satellites (CanSats) are launched via rocket to approximately 2 miles in altitude, and the payloads are then ejected, and return to the ground via parachute. The goal of the ARLISS competition is for the payload to return back to the launch site (which may be several miles away) autonomously. The NevadaSat student participants are responsible for the design, construction, and operation of both the CanSats and a robotic vehicle that finds its own way to the payload and brings it back to the goal.

Pablo Rivera and Eric Wang prep the rover for another test

In September 2006, the NevadaSat team competed against a dozen other universities from the US, Japan, and Europe. The team developed a completely autonomous rover similar to what NASA might use for planetary exploration. The design utilized a 4-wheel drive skid steer rover that navigated using GPS, compass and computer vision to locate, retrieve and return the CanSat to the goal. As in the previous several years, the prize for successfully completing the mission remains unclaimed.

The core team for 2006 consisted of graduate students Pablo Rivera and Guillermo Larios; undergraduate students Palkin Zed and Travis Fields; and faculty advisors Jeffrey LaCombe, Monica Nicolescu, and Eric Wang. Visit the site at www.unr.edu/nevadasat

Students Learn the Benefits of Space Grant Program at Tech Expo

Cindy Routh, Space Grant Coordiantor with students

UNR was bustling with hundreds of students wandering around the Tech Expo in September, which was held at the Jot Travis Student Union. There was much interest in the Space Grant table which brought up the question, what is Space Grant?

Funded by the NASA, Nevada Space Grant is a program that works to expand opportunities for Americans to understand and participate in NASA's aeronautics and space programs by supporting and enhancing science and engineering education, research and outreach programs. Fellowships for graduate students and Scholarships for undergraduate students are offered throughout the fall and spring semesters.

The Tech Expo allowed over 60 students to sign up for e-mail updates and pick up Space Grant materials for upcoming scholarship competitions.

Cindy Routh and Fellowship recipient Alex Vanderhoff

UNR is a constitutionally established, land-grant university. The university served the state of Nevada as its only state-supported institution of higher education for almost 75 years. In that historical role, it has emerged as a doctoral-granting university which focuses its resources on doing a select number of things well. UNR offers a wide range of undergraduate and graduate programs, including selected doctoral and professional studies, which emphasize those programs and activities which best serve the needs of the state, region, and nation. Visit www.unr.edu

2006-2007 Undergraduate Scholarships and Graduate Fellowships

Nevada Space Grant Consortium hosted two student receptions this fall. In the north the reception was held at the Jack C. Davis Observatory in Carson City and was hosted by Robert Collier (Observatory Director and WNCC Physics professor). Stargazing was limited due to an uncharacteristically cloudy evening, but Observatory volunteers were still on hand to set up telescopes for moon-gazing. Pablo Rivera, a UNR graduate student in Computer Science (pictured right), brought and demonstrated an autonomous robot that his UNR CanSat team uses in the ARLISS competition in the Nevada Black Rock desert. UNR Professors and CanSat team leaders Jeffrey LaCombe and Eric Wang presented a slide show of the 2006 competition.

The southern reception was held at the Bigelow Physics Building on the UNLV campus. Both receptions were well attended by student Scholarship and Fellowship recipients, as well as several UNR, UNLV and DRI faculty. Space Grant Director, Chris Fritsen congratulated students on their awards and presented upcoming student opportunities, such as summer internships with NASA.

Lucas Bang is currently completing two undergraduate degrees: one in applied mathematics and another in mechanical engineering at UNLV. He is a senior in both departments and will be graduating in 2007. Lucas plans to pursue a graduate degree focusing on numeric method applications for engineering.

John Bradley is a sophomore at WNCC in the Engineering Program. He plans to graduate in the Spring of 2007 with an Associate's of Science and transfer to the University of Nevada, Reno for his final two years in the Mechanical Engineering Program.

Jonathan Buescher is researching the use of a controllable damper that utilizes Magneto-Rheological (MR) fluid that is encased in an elastomer along with undergraduate studies in mechanical engineering at UNR. He is an active member of the ASME and competed with the Human Power Vehicle (HPV) team. Currently, he is an undergraduate research assistant in Prof. Faramarz Gordaninejad's Composite and Intelligent Materials Laboratory (CIML) whose main focus of research is in smart materials and damping systems.

Oliver Daniel is a senior chemical engineering major and will be graduating in the spring of 2007. He was initially a fine art major at Truckee Meadows Community College and later a graphic design major. He transferred to UNR in the spring of 2006 in chemical engineering; however, found himself in Costa Rica studying abroad for one year and completing a Spanish minor. He has been working to complete his chemical engineering degree with an emphasis in material science and a minor in math. His interests include: water treatment, polymer processing, and renewable energy.

No Photo

Case Egan is an undergraduate, in his junior year majoring in Materials Science and Engineering at UNR. He has been involved and interested in welding processes of different kinds since he was in high school. He was certified for a time and worked as a welder which started his interest in the materials science field. For the past year he has been involved in the research of ceramic synthesis methods and luminescent materials.

Laura Garchar is currently an undergraduate sophomore studying Geological Engineering at UNR. She plans to continue her education through graduate school, and aspire to become some sort of geoscientist. She is mostly interested in doing field work and research, and would definitely like to travel to different parts of the world. She grew up in Reno, with a love for nature and a penchant for learning about the world around her. One of her other passions is art. She actively participates in the Reno arts scene and creates her own work in various mediums, including collage, acrylic paint, photography, and ceramics.

No Photo

David Hillis is a Civil Engineering Student. He is currently working in the UNR NEES research laboratory. The laboratory is equipped with three identical, biaxial, 50-ton shake tables. When he is not at school he is either studying or spending time with his family.

Kurt Katzenstein is working on his Ph.D. in Geo-Engineering at UNR. He received a B.S. and a M.S. in Geological Engineering from UNR. He hopes to graduate in 2007 and teach at a university in the western US. His research interests involve using spacebourne synthetic aperture radar interferometry (InSAR) to monitor land subsidence related to groundwater use, earthquakes, landslides, volcanoes, and regional tectonism.

Jeff McDonald is a Senior in Geological Engineering. He is interested in learning about and solving world water issues, and hopes to pursue a master's degree in Water Resource Engineering. He is currently working as a geotechnical engineering intern for a private geotech company. His interests include music and studying religion.

Tommy On was born and raised in Las Vegas and took several trips to China throughout his life. When he was younger, he wanted to be a scientist, discovering new animals or places on Earth; which slowly altered to studying the unknown space. Because of his childhood memory, he enrolled at UNR in a mechanical engineering major. He hopes to get enough knowledge about engineering to seek a masters degree in aerospace engineering. The hope of joining NASA has always been his goal.

No Photo

Sean Penley has completed his first two years of undergraduate study at UNR. Following a move to Virginia for training with the U.S. Marine Corps, he graduated from Old Dominion University in Norfolk, Virginia with a B.S. in Mechanical Engineering and a minor in Applied Mathematics. While there he worked for three years in research and development for Northrop Grumman. He is currently attending UNR for an M.S. in Mechanical Engineering. Upon completion, he intends to earn his PhD.

Rico Picone is a junior at UNLV. He is majoring in mechanical engineering, and is concentrating his studies in aerospace engineering. He plans to attend graduate school after his undergraduate work is finished. He would like to eventually work in the aerospace industry, and conduct research in this field. He is originally from Idaho and likes returning to Idaho periodically to see his family and friends, and to see the natural beauty that he misses while in the Nevadan desert.

Jeff Shoffner is a junior geophysics major at the University of Nevada, Reno. He has been working for Wendy Calvin on research with the Mars Rovers. Recently they had begun work analyzing Mars analogs at the Rio Tinto mine site in Spain, and the Leviathan mine in California. This summer he plans to work on an undergraduate thesis on some aspect of the Leviathan mine area.

Patrick Sims originally comes from Albuquerque, New Mexico. Currently, he is a sophomore at UNLV, and is majoring in Physics with a minor in Mathematics. He works under Dr. Hubertus Giefers in the High Pressure Science and Engineering Center where materials are studied under extreme conditions. After graduating, he plans on pursuing a doctoral degree in either Physics or Astronautics with a focus on exotic propulsion, and he hopes to find a career working for a national laboratory. He would also like to thank the NVSG for their much-appreciated support.

No Photo

Kody Stone is an undergraduate junior in mechanical engineering UNR. He really likes the maths and sciences...and would rather take a really hard math class than take an English class. He also likes things dealing with robotics and space; he says he has ever since he was little and played with his building sets and watched/read sci-fi stuff (the "good stuff" like Star Trek).

No Photo

Christopher Thomas is an undergraduate junior in Physics at UNR. He was born and raised in Reno, Nevada. He plays the trombone in marching band and in the Reno Pops Orchestra. He is employed at the Mathematics Center and at the Nevada Terawatt Facility. He works under Dr. Vladmir Ivanov. He assists in z-pinch/plasma experiments as his team is responsible for the images taken of formation of plasma. Under the supervision of Dr. Thomas Cowan, director of NTF, he will assist in setting up a nuclear diagnostics laboratory.

Jason Vance is in the Doctoral program, School of Life Sciences, at UNLV. He is tentatively scheduled to graduate in the spring of 2008. He currently investigates the biomechanics of insect flight under natural and experimental aerodynamic constraints to elucidate compensatory strategies and kinematic solutions for the development and function of Micro Aerial Vehicles.

Alex Vanderhoff is a first year graduate student majoring in mechanical engineering at UNR. She is planning to spend two months this summer working for Dr. Ji Su of the Advanced Materials Processing Branch of NASA/ Langley Research Center in Hampton, Virginia. When she completes her Master's degree at UNR she plans to work in the aerospace industry and hopefully an internship at NASA will help her achieve that goal.

No Photo

David York received his Bachelor of Science degree in Mechanical Engineering from the University of Nevada, Reno in 2005 and is now trying to complete his Master of Science degree. His current research is in the field of "smart" materials specifically using Magnetorheological (MR) fluids for vibration control.

$187,500 awarded to students

Photos from the student reception

Students who also received a Scholarship or Fellowship Award:

Kyle Altemara
Brandon Bechtol
Case Egan
Travis Fields
Connon McCune
Ian McCubbin
Tanya Sloma

Detecting life in the Atacama Desert

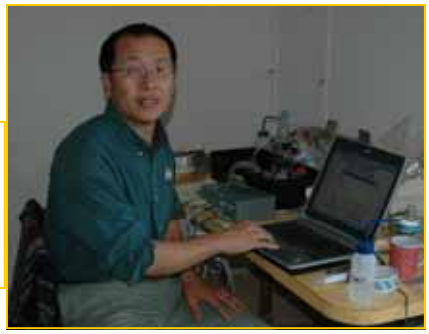
As the environmental research arm of the Nevada System of Higher Education, DRI conducts cutting-edge applied research in land, air and water quality across Nevada, the United States and on every continent. With more than 500 employees and two main campuses in Las Vegas and Reno, Nev., DRI generates $45 million in total annual revenue. DRI's faculty members are untenured, entrepreneurial and responsible for their own salaries from external grants and contracts. This blend of academic rigor and private-sector pragmatism has earned DRI a reputation for delivering rapid, high-quality environmental science in a business-like fashion.

This summer, the Mars chiral life detector developed by Dr. Henry Sun at the Desert Research Institute was field-tested on Mars-soils in the Atacama Desert (Chile). The instrumentation is an improvement over the 1976 Viking Labeled Release experiment in that it can not only detect soil respiration, but also sense the presence of certain oxidants that can cause false positives on a life detection mission. The new life detection device adds amino acids to soils in the form of pure isomers rather than as a racemic mixture. If D- and L-isomers are decomposed at different rates, life is indicated. If they are decomposed equally, chemical oxidation is indicated.

Chris McKay inspecting the Mars life detector

The life detection experiment was part of the Spaceward Bound program, an educational program funded by NASA Exploration Systems Mission Directorate (ESMD) and organized at NASA Ames. The focus of Spaceward Bound is to train the next generation of space explorers by having students and teachers participate in the exploration of scientifically interesting but remote and extreme environments on Earth as analogs for human exploration of the Moon and Mars. In Atacama, a total of eight American teachers and seven Chilean teachers participated in the ten-day adventure. The next Spaceward Bound expedition will take place in the Mojave Desert and Death Valley, March 20-25, 2007. More information about Spaceward Bound is available at http://quest.nasa.gov/projects/spacewardbound.

Chris McKay (Science lead), Liza Coe (education lead), and American teachers at the broadcast through NASA webcast



Henry Sun working on Mars–like soils in the Yungay station

Truckee Meadows Community College provides access for life-long learning opportunities to improve the quality of life for our diverse community. TMCC creates a supportive, intellectually and culturally dynamic environment by offering the following: General education programs, Transfer degree programs, Developmental education programs, Occupational/technical degrees and programs, Customized job training, Continuing education and recreational programs, Student and academic support services. The college anticipates and responds to educational needs of individuals to achieve their goals, aspirations, and dreams.

TMCC expands space science

PHYS 117 Introduction to Space Science and Engineering recently received formal approval from TMCC Faculty Senate. It will be taught for the first time in Spring 2007. Many course activities were adapted from larger scale NevadaSat activities, and NVSG funding helped in developing this course.

Transitions.....

The transition at NASA to a new vision and mission for Space Exploration has lead to the dramatic realignment of NASA mission priorities over the past two years. This major transition within NASA came at a time when our Nevada NASA Space Grant consortium was experiencing a series of changes in program coordinators, Associate Directors, and Director. The combination of these transitions at both the national and state levels has led to operational challenges in the administration of the Space Grant Fellowship and Scholarship programs as well as the NASA EPSCoR project. The efforts of multiple people (including Jim Taranik, Lori Rountree, Annika Mosier, Cheryl Goudy, Paula Adkins, Lori Brazfield and Cindy Routh) during that time are greatly appreciated. I am pleased to report that through their dedicated work and advice many challenges have been met during the past year. Despite feeling that we have made it through a year of transitions we have much work that lies ahead in hopes of providing new opportunities for students, faculty and industrial affiliates in Nevada.

For students – we are now offering enhanced funding of scholarships, fellowships, internships as well as increased opportunities for participation in team engineering or science challenges or competitions (we have awarded over $180,000 for undergraduate and graduate students this year so far!!!). For faculty – we are supporting senior design projects and hope to support more. We are also going to be funding workforce development projects of up to two years in duration and more research topics through our core EPSCoR programs. We are currently awaiting the call for proposals for the next round of NASA EPSCoR research funding and are in the midst of selecting proposals that will go forward to answer this highly anticipated call.

An area that we are hoping to develop more opportunities in is the area of internships that can be gained with our industrial affiliates. We are working to make this a realization for Spring, Summer and Fall of 2007. If you have a desire to further develop a working partnership with an industrial or educational affiliate please let us know so we can determine how best to help and make meaningful local internships.

A grand challenge remains in ensuring that underrepresented groups become more engaged in the engineering and math disciplines at all levels of our institutional operations. To that end we will most likely be creating a diversity initiative within the Nevada Space Grant program in the upcoming year.

As I look back over the past few months, the Space Grant and EPSCoR programs have experienced multiple transitions that came at an extremely bad time due to the major changes in NASA's operations and plans. However, I believe that these transitions are nearing an end and we will find ourselves in a period where the NASA mission for Moon, Mars and Beyond is one that Nevada's institutions of higher education and research will be more significantly contributing to in the future.

Director, Nevada Space Grant Consortium & NASA EPSCoR

Nevada Space Grant has received increased funding which will allow for Workforce Development awards. Please visit the web page at http://www.unr.edu/spacegrant/ to stay up-to-date on current solicitations.

For submissions to the newsletter please e-mail your article, announcement, or suggestion to the NASA EPSCoR Program Office, to Lori at brazfiel@nevada.edu or call 702.862.5524 for more information

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We are on the Web at http://www.unr.edu/spacegrant/

Calendar of Events

NASA Exploration Internships

Provide students ESMD-relevant work experience in industry or at a NASA center. Students should be engaged in hands-on engineering projects with a strong and involved placement mentor.

ESMD Space Grant Program is accepting applications for internships at NASA Centers. All students who are highly motivated toward a career in aerospace science, which include: any science, mathematics, engineering, or technology discipline or field of study that is concerned with or that is likely to improve the understanding, assessment, development and utilization of space are encouraged to apply.

Spring Internships are due November 15th

Summer Internships are due February 16th

The application process will be done on-line (link below)

Application: http://platinum.ts.odu.edu/esmd2007.nsf/Main?OpenPage

Information: http://education.ksc.nasa.gov/ESMDSpaceGrant/

Fellowship Announcement – Due Nov 17th

http://www.unr.edu/spacegrant/fellowships/applications.html