As the new chair, it is my pleasure to fill you in on the activities of the members of the Department of Astronomy since the last newsletter. I thank Larry Rudnick for his very capable leadership during his term as interim chair following Len Kuhi’s retirement. As we plan for the future, I am committed to positioning our program to participate in novel, new opportunities in astronomy and to move into the upper echelon of astronomy programs nation-wide.

Our access to the Large Binocular Telescope (LBT) at Mt. Graham, AZ is already paying off. Both primary mirrors are installed. An impressive “first light” image of the edge-on spiral galaxy NGC891 was taken on October 12, 2005 (see page 4). Chick Woodward and his graduate student, Erin Ryan, obtained the very first science images collected with LBT. They will use them to analyze the frequency of occurrence of certain classes of asteroids. Regular operations are expected to begin next fall.

Minnesota astronomers also have observing time on other telescopes at the University of Arizona’s Steward Observatory (SO). These include the 6-meter MMT at Mt. Hopkins, AZ and the two 6-meter Magellan telescopes at Las Campanas, Chile.

The 3D Morphology of VY Canis Majoris

A team of Astronomers led by Professor Roberta Humphreys and including Professor Terry Jones, used NASA’s Hubble Space Telescope and the W.M. Keck Observatory in Hawaii, to produce a three-dimensional image of the matter emitted from the bright super-sized star VY Canis Majoris and have learned that the gaseous outflow emitted from the star is much more complex than originally thought.

VY Canis Majoris, a red supergiant star that is also classified as a hypergiant because of its very high luminosity, has had many outbursts over the past 1,000 years as it nears the end of its life. The eruptions have formed loops, arcs, and knots of material moving at various speeds and in many different directions.

The three-dimensional image was produced by measuring the motions of the ejected material and then mapping the distribution of the highly polarized dust, which reflects light at a specific orientation. The polarized light shows how the dust is distributed.

“We thought mass loss in red supergiants was a simple, spherical, and uniform outflow, but in this star it is very complex,” Roberta reported.
VY Canis is ejecting large amounts of gas at a prodigious rate and is consequently one of our most important stars for understanding the high-mass loss episodes near the end of massive star evolution. During the outbursts, the star loses about 10 times more mass than its normal rate.

With these observations, the team found that the numerous arcs, loops, and knots were moving at different speeds and in various directions giving them a complete picture of the outflows and their spatial distribution, and confirming that they were produced from separate events and from different locations on the star. These episodes of high mass loss are probably related to convective activity and magnetic fields.

The material was ejected in several events over 1,000 years, while a knot near the star may have been ejected as recently as 50 years ago.

A massive star becomes a red supergiant near the end of its life, when it exhausts the hydrogen fuel at its core. The typical red supergiant phase lasts about 500,000 years. As the core contracts under gravity, the outer layers expand, the star gets 100 times larger, and it begins to lose mass at a higher rate. VY Canis Majoris has probably already shed about half of its mass, and it will eventually explode as a supernova.

The results of this research were presented on January 8, 2007 at a press conference at the annual meeting of the American Astronomical Society. This research is based on observations with the NASA/ESA Hubble Space Telescope obtained at the Space Telescope Science Institute, which is operated by the Association of Universities for Research, Inc. under NASA Contract #NAS5-26555.
Our participation in the LBT/SO collaboration is possible through a generous $5 million commitment for capital construction by Hubbard Broadcasting, Inc. Hubbard recently pledged an additional $750K to support near-term LBT operating costs while we work to raise an endowment to fund long-term operations and astronomy chairs.

Minnesota faculty and students continue to obtain remarkable new results with NASA’s space observatories: Spitzer Space Telescope, Hubble Space Telescope (HST), the Chandra X-Ray Observatory, GALEX, FUSE, and Swift. Some of these are described elsewhere in this newsletter. Spitzer will operate through 2014. A review of the Spitzer Project and other science articles by Minnesota astronomers can be read on our webpage at www.astro.umn.edu.

We have had much success in many other research areas. Tom Jones and Larry Rudnick secured continued support from the NSF for their coordinated theoretical/observational program which over the years has been the source of many PhD theses. Paul Woodward just received a three-year contract from Los Alamos National Laboratory (LANL) for developing, testing, and demonstrating new numerical techniques for LANL project codes. Liliya Williams has expanded her research program through an archival grant from the HST and a new NASA ATP grant for her work on dark matter halos. Evan Skillman continues his work as a leading authority on the chemical evolution of galaxies. Chick Woodward has also been a leader in the infrared world and a work horse for the department with roles that include acting as project director for the UM/LBT, service on the Gemini Board of Directors and other national academy advisory committees, and maintaining a heavy observing schedule. Kris Davidson and Roberta Humphreys lead the HST Eta Carinae Treasury Project, which starts a new chapter as they follow Eta’s change of state by incorporating new images into the Treasury Project Archive. Roberta and Terry Jones presented research on VY Canis Majoris at a press conference at the last AAS meeting in Seattle (see accompanying article). Roberta will be returning to the department after five years in the I.T. Dean’s Office. We are happy to be getting her back.

Evan Skillman recently completed seven years as the director of graduate studies (DGS) and was honored last year with the Graduate School’s “Best DGS” award. The members of our new Graduate Student Committee (GSC) are Kris Davidson (the new director of graduate studies), Tom Jones, and Liliya Williams. At this writing, the GSC is vigorously conducting what promises to be a highly successful effort to recruit new graduate students for the upcoming academic year.

Larry Rudnick was honored in 2005 with a University of Minnesota “Outstanding Community Service” award for his efforts in the “Science Works!” Program and for his service as a founding member and secretary/treasurer for the Minnesota Planetarium Society. We are all looking forward to the new Minnesota Planetarium and Space Discovery Center that will open in 2009 in downtown Minneapolis. In the meantime, the ExploraDome, a portable planetarium, is being used to teach kids across Minnesota about the Earth, Moon, planets and stars.

I would also like to thank all of you who have made gifts to our program over the past several years. Your generosity has helped us in many ways including the funding of the Jones and Swanson Undergraduate Scholarships, the Ney and Penrose Graduate Research Fellowships, and the Kaufmanis Public Lecture Series. We will offer an exciting new Kaufmanis Lecture again this fall.

Stay tuned and feel free to contact me or the departmental office if you have any questions about anything you have read in this newsletter.

—Bob Gehrz
The “First Light” image at LBT was obtained on the night of October 12, 2005. The target was a spiral galaxy in the constellation of Andromeda known as NGC681 which is only a distance of 24 million light-years away, but was chosen because it is an attractive galaxy. The galaxies in the background are more typical of what a large telescope like the LBT will study. The image was captured using the state-of-the-art Large Binocular Camera (LBC) which is mounted high above the primary mirror.

The University of Minnesota submitted proposals to the LBT for observing time on the primary camera and was lucky to have two selected; one for Evan Skillman that was rated high priority “A” and the other for graduate student Erin Ryan that was rated a lower priority “B.” Observing started in mid-January, and as luck would have it, the timing and instrument conditions were prime for Erin’s target (an asteroid), so the LBT queue coordinator chose to obtain Erin’s data on the first night that scientific observations were taken, which was January 16, 2007. Erin is currently working with Chick Woodward on the second-year project entitled, “Asteroid Colors and Number Counts as a Function of Ecliptic Latitude as Observed in Spitzer Data” and hopes to use the LBT data for her Ph.D thesis.

The LBT - Red Camera and optics on the second mirror may be commissioned in April 2007 and First Binocular Light should happen in September 2007. When completed, the clarity will be ten times that of the Hubble and this telescope is on the ground! The technology will allow astronomers to do things from finding and imaging the first Earth-sized extra-solar planets to mapping the neighborhood of the inner Milky Way, where a monster black hole flings stray stars off on wild orbits. The potential uses for this incredible, innovative technology are astounding!

A group of Institute of Technology alumni from the Phoenix and Tucson area toured the LBT in February. They were accompanied by Bob Gehrz, Associate Dean Mos Kaveh, I.T. Development team members Jennifer Clarke and Kim Dockter and our good friend Russ Penrose. Pictured left, standing in front of the LBT azimuth bearing mount with Bob Gehrz, is alumnus Tom Young.

The LBT is an international collaboration among institutions in the United States, Italy and Germany. The LBT Corporation partners are: The University of Arizona on behalf of the Arizona university system; the Instituto Nazionale di Astrofisica, Italy; the LBT Beteiligungsgesellschaft, Germany, representing the Max Planck Society, the Astrophysical Institute Potsdam, and Heidelberg University; the Ohio State University; and the Research Corporation, on behalf of the University of Notre Dame, the University of Minnesota, and the University of Virginia.
The Spitzer Space Telescope has provided funding opportunities for many University of Minnesota researchers since its launch in August 2003 and is now entering its fourth cycle of observations. Among the science categories that Spitzer supports, is one on the study of planetary nebulae, including supernova remnants. When a star explodes, it ejects huge amounts of gas and dust into space, where they become the building blocks of stellar systems like our solar system. The remnants of supernova explosions therefore have much to tell us about the origins of our world.

Graduate student Tea Temim, working with Bob Gehrz and Chick Woodward, studies the Crab Nebula, a filamentous remnant of a star that exploded in A.D. 1054 in the constellation Taurus. Images from Spitzer, which operates at infrared wavelengths, show an absence of a type of fine cosmic dust that is usually expected to condense out of supernova ejecta. As astronomers usually expect to find a young supernova remnant like the Crab Nebula to be packed with micron-wide dust motes, this discovery was a big surprise. Instead, the images show that the Crab contains a much courser dust, particles that, although only a few millionths of a meter in size, are still 10 to 100 times larger than the usual dust.

Infrared images like ones taken of the Crab, which is located 6,500 light-years away, could not have been made from a ground-based telescope because the Earth’s atmosphere filters out much infrared light. Spitzer can pick up faint infrared signals only because it is cooled to minus 450 degrees F. If it were warmer, its own heat would drown out the signals from the Crab.

“The images are exciting because we’re filling in the puzzle with infrared,” Tea said. “Infrared is where we can find out information about the formation of dust.” Now she hopes to find the answer to the mystery surrounding the missing small dust particles. Is the neutron star at the core of the Crab Nebula spinning so fast that it is vaporizing the small particles? Are the protons and electrons thrown out by the core destroying the fine dust? Tea is trying to map the energy distribution from these ultrafast particles (called synchrotron radiation) that come from the neutron star to see how the particles spread out and mix with the rest of the ejected material.

Tea has been invited to present a plenary talk on her Spitzer Crab Nebula results at a Supernova Remnant Workshop to be held in Honolulu, Hawaii prior to the May 2007 AAS meeting.
Many Thanks to our Donors!

This year we received a commitment from Hubbard Broadcasting to help with our Large Binocular Telescope operating costs, in order to bridge us until we can start getting some exciting results from the telescope and get people, potential philanthropists, interested in this exciting science! It is your generosity that makes projects like this possible but we still have a long way to go to reach our goal of realizing endowment earnings that will help us meet our annual operating costs. Thanks again to Stan Hubbard and Hubbard Broadcasting for making the Astronomy Department’s dreams for a large telescope, a reality. We are almost there and the images are starting to come!

We also received additional major endowment support this year from Russell Penrose, and James Earl through the Helena Foundation, for the Russell Penrose and Edward P. Ney Graduate Student Fellowship Funds, respectively. Our fellowship recipients since these endowments were established, are featured on the next page.

The 2005 AAS meeting that was held in Minneapolis was supported in part, by donations from Ball Aerospace Corporation, Lockheed Martin, Hubbard Broadcasting, Dairy Queen, the University of Minnesota Foundation, as well as the Institute of Technology, Office of the Executive Vice President and Provost, and the Office of the Vice President for Research.

To the above philanthropists and all of our other friends that continue to remember us year after year, we thank you for giving us the opportunity to sponsor exciting public programs, support talented graduate and undergraduate students, and participate in major new research projects such as the LBT. Due to space limitations in this publication, we acknowledge below, all contributions of $50 or more that we received since our last newsletter, with contributions above $500 marked with an asterik. For further information about giving opportunities, please contact: Ginny Olson 612-624-4811, (ginny@astro.umn.edu) or Bob Gehrz 612-624-7806, (gehrz@astro.umn.edu).

Karlis Kaufmanis Public Lecture:
- Thomas G. & Kitty W. Cahill
- John J. Felcyn
- Becky J. and Carl J. Glister
- Bruce R. & Irma J. Kelley
- Joan S. Korek
- Susan Lipscy
- Mr. & Mrs. Richard T. Murphy, Jr.
- Janis Robins
- Christine Rud
- Jeffrey G. Scott
- Gary J. Sjolander*
- Robert Wariakois
- Andrew Young

Astronomy Fund:
- James W. Bergstrom
- Cynthia A. Blaha
- Ralph L. Fieldler
- Gary R. Hauck
- Jerry A. & Deborah J. Herby
- Robert M. Humphreys*
- Paul F. Jaeger
- Christopher & Jennifer Johnson
- Joan S. Korek
- William R. Leiendecker
- Eric A. Lufkin
- Patricia A. Maynard
- Brooke A. Nielsen
- Ellen Pobul
- Heidi L. Poxon
- Stanley P. Sagan
- Craig D. Skone
- Curtis J. Struck
- Keith A. Thorne
- Robert Wariakois
- Hans W. Wendt

Russell Penrose Fellowship:
- Russell J. Penrose*

Edward P. Ney Fellowship:
- The Helena Foundation*
- Carlos P. Avery
- James W. Bergstrom
- Robert & Sue Gehrz*
- Patrick W. & Karen E. Karn
- Louis A. Rose*

Large Binocular Telescope:
- Hubbard Broadcasting*
- Liliya L.R. Williams

AAS Meeting 2005 (corporate sponsors)
- Ball Aerospace Corporation*
- Dairy Queen*
- Hubbard Broadcasting*
- Lockheed Martin*
**Spotlight on the Penrose and Ney Fellows**

Started in 2001 under the 21st Century Graduate Fellowship Program, the Edward P. Ney Graduate Fellowship and the Russell J. Penrose Astronomy Fellowship Endowments are starting to have a great impact on our ability to attract quality students. Below are research highlights from the students who received fellowships from these two endowments during the first three years since we began offering them.

**Clayton Hogen-Chin** was the 2003-04 Penrose Fellow and 2004-05 Ney Fellow. “For my Ph.D research I am working with Professor Shaul Hanany and Professor Terry Jones on the E and B Experiment, EBEX. EBEX is a balloon borne polarimeter telescope designed to detect the B-mode polarization signal of the CMB. This signal is a result of the inflationary gravitational wave background, and serves as a direct probe of the first moments after the Big Bang. I am working to design, construct, and test cryogenic instrumentation for EBEX, including the optics box and focal planes.”

**Daniel Weisz** was the 2004-05 and 2005-06 Penrose Fellow. “I am currently studying star formation in Local Group and nearby dwarf galaxies with Prof. Evan Skillman. We are using data taken with the Wide-Field Planetary Camera 2 (WFPC2) and the advanced camera for surveys (ACS) on the Hubble Space Telescope (HST). We are using photometry of selected fields to reconstruct the most likely star formation history in each galaxy. HST has the ability to resolve individual stars in these galaxies, which allows for an unprecedented study of star formation.”

**Karl Isensee** was the 2005-06 Ney Fellow. “I am currently working with Prof. Larry Rudnick and studying the supernova remnant Cassiopeia A’s knots and filaments in the X-Ray using images from Chandra. I have images from 2000, 2002, and 2004. This allows me to look at changes across the epochs, especially watching how the last electrons are stripped from elements as they hit the supernova’s powerful shock.”

**Peter Mendygral** is the 2006-07 Ney Fellow. “I am currently working with Tom Jones utilizing large simulations of astrophysical fluids to investigate the energetics of jets and their environment. We apply these models to radio jets to test theory and gain intuition into how these systems evolve. By including the relevant physics (e.g. non-thermal emission) these simulations can be compared with observations of a variety of objects such as narrow-angle tail radio galaxies.”

**Steven Warren** is the 2006-07 Penrose Fellow. “I am currently working with Dr. Andrew Cole and Dr. Evan Skillman on multi-object fiber-fed echelle spectroscopic data taken with the 4.2m Herschel Telescope. I am investigating the near-infrared calcium triplet (CaT) lines of red giant stars to extend the known CaT - Metallicity relation of galactic globular clusters to other stellar populations with larger variations of metallicities and ages. This will have a direct effect on research into galactic and extra-galactic stellar populations: most notably the globular clusters of M31 (the Andromeda Galaxy) and the Milky Way satellite galaxies such as the Large and Small Magellenic Clouds.”

About the people that make these fellowships possible:

Russell J. Penrose grew up in northern Minnesota and graduated from the University of Minnesota in 1949 with a bachelor’s degree in electrical engineering. After graduation, Russ worked for North American Aviation (later to be Rockwell International) and then towards the end of his career, for Lear-Seigler. Russ retired in 1982 and currently lives in California.

James Earl was a University of Minnesota Physics graduate who worked with Ed Ney in the 1950’s. James and his wife Sylvia established this endowment in honor of the man that he admired so much. Added to this endowment, were the dozens of memorial gifts that the department received upon Ed’s death in 1996, and the others that continue to be sent to us in Ed’s memory.
Exploring the Cosmos with Terry J. Jones

Leading science writer Jeanne Hanson and Professor Terry Jones present the wonders of the cosmos in their book *Astronomy for the Utterly Confused*. Written for the non-astrophysicist, this book covers how gravity works, what black holes are, why some stars become supernovas, and when and where to look for the next comet. Explore the basics of astronomy, learn fun facts, and test your understanding with over 400 self-testing questions and answers with the help of a real astronomy professor.

You can even stop by the Department and Terry will autograph your book for you! (Call first though!)

Public Outreach

Universe in the Park

This successful program has been continued for another summer through support from NASA through its Education/Public Outreach Program and the Minnesota Department of Natural Resources. The program sends representatives from the department to one of four Minnesota State Parks to give a short public talk, followed by an observing session using portable telescopes. The talk includes a slide show and instructions on how to use a star map. Talks are scheduled on selected Friday and Saturday nights starting in July and ending in September. Details can be found at: [www.astro.umn.edu/outreach/uitp/](http://www.astro.umn.edu/outreach/uitp/).

Public Talks

Each year the Astronomy Department faculty and graduate students make over 60 public presentations on astronomy topics, mostly at Twin Cities public schools and to other organizations such as the Girl Scouts and Boy Scouts. The activities include observing with telescopes, slide presentations, and hands-on experiments, and can be tailored to specific topics like comets, planets, and constellations, as requested by the schools. Details can be found at: [www.astro.umn.edu/outreach/presentations/](http://www.astro.umn.edu/outreach/presentations/).

Minnesota Starwatch

Minnesota Starwatch is now available only in electronic format on our website at: [www.astro.umn.edu/outreach/starwatch/](http://www.astro.umn.edu/outreach/starwatch/).

Public Observing

The Astronomy Department offers public viewing with telescopes on the roof of the Tate Laboratory of Physics (116 Church Street SE) every Friday night when classes are in session (the week of Labor Day through mid-May) and when the sky is at least 50% clear. There is no public observing during Winter Break (the three weeks following Christmas) and Spring Break (the week of March 11-15 in 2008). Call to check on the observing status before you come at: (612) 626-0034. Groups require advance reservations. Please call the public outreach coordinator at (612) 624-3859 to arrange for a group visit.
New Graduate Students

Martha Boyer - B.S. Physics and Astrophysics, University of Minnesota. Martha is currently working with Chick Woodward on the second-year project entitled, “Stellar Populations and Mass Loss in M15: A Spitzer Space Telescope Detection of Dust in the Intracluster Medium.”

Shea Brown - B.A. Physics, University of Maine and Ph.D work in astrophysics at Brandeis University. Shea is currently working with Larry Rudnick as a research assistant on the NSF grant entitled, “Relativistic Plasma Probes of Low Overdensity Environments.”

Karl Isensee - B.A. Physics, Carleton College. Karl is currently the head teaching assistant and has worked with Larry Rudnick researching the “Evolution of Dust in Cassiopeia A.” Karl was awarded the Edward P. Ney Graduate Student Fellowship for 2005-06.

Erin Ryan - B.S. Astronomy, University of Arizona. Erin is currently working with Chick Woodward on the second-year project entitled, “Asteroid Colors and Number Counts as a Function of Ecliptic Latitude as Observed in Spitzer Data.” Erin also works with Roberta Humphreys as a research assistant on the collaborative NSF project “Mapping the Asymmetric Thick Disk.”

Peter Mendygral - B.S. Physics and Astronomy, University of Wisconsin - Madison. Pete was awarded the Edward P. Ney Graduate Student Fellowship for 2006-07 and also works as a teaching assistant.

Daniel Polsgrove - B.A. Physics, U.S. Air Force Academy and Masters Degree in Astrophysics and Astronomy, Michigan State University. Dan has received full support from the Air Force for his Ph.D. studies. He also works with Shaul Hanany in his research lab.

Steven Warren - B.S. Astronomy, San Diego State University. Steve was awarded the Russell Penrose Graduate Student Fellowship for 2006-07 and also works as a teaching assistant.

Graduate Student News

Awards:

Martha Boyer was awarded the Louise T. Dosdall Fellowship from the Graduate School for the 2007-08 academic year.
Sean O’Neill received a doctoral dissertation fellowship from the Graduate School in 2006-07.

Ph.D/M.S. Degrees Awarded:

Dain Kavars, Ph.D., August 2006. Thesis: “Neutral Hydrogen Self-Absorption in the Milky Way Galaxy.” Advisor: John Dickey. Dain is currently an instructor at Ball State University. He and his wife Amanda are the proud parents of a new baby girl “Olivia.”
Edward Rhoads, Ph.D., May 2005. Thesis: “A Survey for TNOs Using the APS POSS I Database.” Advisors: Roberta Humphreys and Chick Woodward. Ed is currently a lecturer at Indiana University-Purdue University at Indianapolis.
Tea Temim, M.S. February 2007. Advisor: Chick Woodward. Tea is continuing towards a Ph.D.
Martha Boyer, M.S. November 2006. Advisor: Chick Woodward. Martha is continuing towards a Ph.D.
Paul Robinson, M.S. September 2006. Advisor: Larry Rudnick
John Vermedahl, M.S. September 2005. Advisor: Kim Venn
Kris Davidson and Roberta Humphreys received support from the Hubble Space Telescope (HST) General Observer Program for “Following Eta Carinae’s Change of State.” Kris is now the Department of Astronomy Director of Graduate Studies.

Bob Gehrz was appointed chair of the Astronomy Department after serving a year as interim. He also received another I.T. Professor of the Year in Astrophysics award.

Bob Gehrz, Elisha Polomski, Larry Rudnick, Evan Skillman, Chick Woodward, and Paul Woodward all received funding from the Jet Propulsion Laboratory for Spitzer Cycle 2 and/or Cycle 3 projects.

Roberta Humphreys received a three-year NSF grant entitled, “Collaborative Research to Map the Asymmetric Thick Disk,” and an HST General Observer grant for “A SNAP Image of the Circumstellar Ejecta of AE And in M31.” Roberta will be returning to the department this fall after three years as associate dean of I.T.


Larry Rudnick received a 2005 Outstanding Community Service Award for his efforts in the Science Works! Program and as a founding member and secretary/treasurer of the Minnesota Planetarium Society.

Evan Skillman received several grants from the HST General Observer and Archive Programs for his research on such topics as the “Leo A Dwarf Galaxy,” “M81 Group Dwarf Galaxies,” “Onset of Star Formation in the Universe,” and “A Nearby Galaxy Survey.” Evan also received grants under NASA’s GALEX and FUSE programs. Evan was awarded a Best Director of Graduate Studies Award from the Graduate School. Evan has turned his DGS reins over to Kris Davidson starting this year.

Liliya Williams was promoted to associate professor in 2006 and was recently successful in getting funding from NASA for a project with Eric Barnes entitled, “Constraining Physically Motivated Gravitational Equilibria of Dark Matter Halos,” and an HST Archive project entitled, “Mapping Out Substructure in Galaxy Clusters using Strong Lensing.”

Chick Woodward was appointed as project director to the LBT. Chick is also the U.S. representative to the Gemini Board and is a member of the International Gemini Science Committee and the LBT Science Committee. In addition to his numerous Spitzer awards, Chick received grants from the NASA Ames Research Center, Chandra Cycle 8, and the NASA GALEX program.

Paul Woodward will continue his collaborative investigation with the Los Alamos National Laboratory under a new three-year contract for the “Development, Testing, and Demonstration of New Hydrodynamical Techniques for Use in the RAGE AMR Code, with Applications in Astrophysics.”

New Hires:

Andrew Cole, Research Associate. Andrew works with Evan Skillman on HST research.

Mike Knox, Research Specialist. Mike graduated from the UM last fall and has been hired by Paul Woodward to continue his efforts in the LCSE working on interactive computing projects.

Sebastian Hidalgo-Rodriguez, Research Associate. Sebastian works with Evan Skillman on the HST research.

Departures:

Eric Barnes, Research Associate, is now an assistant professor at the University of Wisconsin-LaCrosse, Dept. of Physics.

John Dickey has officially retired from the UM and was given the title of “Emeritus Professor.” He currently resides in Australia.

Kevin Edgar, Research Associate.

Henry Lee, Research Associate, is now a science fellow at Gemini Observatory, La Serena, Chile.

John Martin, Research Associate, is now an assistant professor at the University of Illinois-Springfield.

Undergrad Students

Michele Benesh received a 2006-07 UROP grant for the project entitled, “Determining the Sersic Profile for Density Distributions using Gravitationally Lensed Quasars.” Sponsor: Liliya Williams.

Tyler Coffey received a 2006-07 UROP grant for the project entitled, “Simulation of Plank Observatory Observations of the Galactic Plane.” Sponsor: Terry Jones.

Leah Olson received a 2006-07 UROP grant for the project entitled, “Blue Compact Dwarf Galaxies: Testbeds for Starburst Duration.” Sponsor: Evan Skillman.

Vanessa Cheesbrough was awarded one of the two Laverne and Ted Jones Astrophysics Scholarships for the 2006-07 academic year. Vanessa is an honors student in physics and astrophysics and is interested in galactic and stellar evolution and structure, as well as dark matter.

Ashley Nord was awarded a Laverne and Ted Jones Astrophysics Scholarship for 2005-06 and 2006-07. Ashley is an honors student majoring in astrophysics and global studies and hopes to attend graduate school.

Kyle Zilic was the recipient of the 2005-06 Hazel V. Swanson Astrophysics Scholarship and is currently attending graduate school at the University of Minnesota in physics. Kyle also works with Shaull Hanany in his research lab and is a TA.

Bryce Beverlin II was the recipient of the second 2005-06 Laverne and Ted Jones Scholarship and is currently attending graduate school at the University of Minnesota in physics where he is a TA.
Department of Astronomy, 2006-2007

Faculty
Kris Davidson, Dir. Graduate Studies
Robert Gehrz, Chairman
Roberta Humphreys, Assoc. Dean I.T.
Terry Jones, Dir. Undergraduate Studies
Thomas Jones
Lawrence Rudnick
Evan Skillman
Liliya Williams
Charles (Chick) Woodward
Paul Woodward

Emeritus Faculty
John Dickey
Leonard Kuhi

Adjunct Faculty
Howard French, Honeywell
Kim Venn, U Victoria, BC

Astrophysics Graduate Faculty from Physics
Cynthia Cattell
Michael Duvernois
Shaul Hanany
Robert Lysak
Keith Olive
Robert Pepin
Yong-Zhong Qian
John Wygant

Postdoctoral Research Associates
Andrew Cole
Sebastian Hidalgo-Rodriguez
Elisha Polomski

Sr. Research Associate
David Porter

Research Specialist
Michael Knox

Support Staff
Corinne Komor, Student Secretary
Allen Knutson, Electronic Mech. Specialist
Virginia (Ginny) Olson, Assistant to the Chair
Terry Thibeault, Executive Assistant

Graduate Students
Crystal Austin
Martha Boyer
Shea Brown
Kisha Delain
Paul Edmon
Jessica Ennis
Lorren Helton
Leyton Hogen-Chin
Karl Isensee
Dale Jackson
Kristen McQuinn

Graduate Students
Peter Mundygral
Michael Milligan
Sean O’Neill
Daniel Polsgrove
Gerald Ruch
Erin Ryan
Michael Schuster
Tea Temim
Steven Warren
Dan Weisz
Change Service Requested

The opinions expressed in this newsletter do not necessarily reflect the official policies of the Board of Regents or the University Administration.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status,