

The Kirkwood Society

A Newsletter for Alumni and Friends of the Astronomy Department at Indiana University

Summer/Fall 2004

GREETINGS FROM THE CHAIRMAN!

Heading into the final year of my chairmanship, I am pleased to report that the Department continues in extremely good health and is doing more than ever to promote its research, education, and outreach missions. This issue of the *Kirkwood Newsletter* highlights a few of our significant accomplishments during the past year. It has been a real challenge to attain this level of success during a time of weak economy, slim State funding, and rapidly increasing operating costs for the university. We owe it to the extraordinary efforts and contributions of our students, faculty, staff, alumni, and friends, some of whom are recognized in these pages.

The past decade has seen many exciting discoveries in Astronomy. For instance, there are really planets around other stars, and many of them are super-Jupiters close to their stars. Mars was almost certainly once wet in places and, even today, may have underground environments conducive to microbial life. The Big Bang occurred precisely 13.7 billion years ago, and, if you think dark matter is mind boggling, our Universe is not just expanding but is being accelerated by an even more mysterious dark energy that dominates the matter components, both dark and baryonic. Orbiting observatories and adaptive optics continue to yield an ever sharper view of our Universe at all wavelengths. It is hard to imagine what the coming decade may hold.

Those of you who receive this *Newsletter* understand that a cosmic perspective and an interest in new ideas and discoveries are essential for the human spirit. Support and funding for education and science is critical to our future success as a species. Over the past three years, I have been pleased to do what I could to ensure that IU's Department of Astronomy would prosper as a vehicle for doing science, for educating the next generation of scientists, and for promoting public interest in science. This *Newsletter* is one small way in which I can thank you, on behalf of the rest of the Department, for your help and concern. Thanks!

H.H. "JACK" SCHMITT



Jack Schmitt, Steven Dunn, Tyler Summitt, & Dylan Crusenberry

As a premier outreach event of the year, the Departments of Astronomy, Geological Sciences, and Physics, with generous support from the College of Arts and Sciences, the Office of the Dean of Faculties, and the School of Informatics, sponsored a visit and lectures by Dr. Harrison H. "Jack" Schmitt – geologist, former Apollo 14 astronaut, former U.S. Senator from New Mexico, and the last human being to walk on the Moon. Jack spent two busy days with us, on April 12 and 13, giving talks and having discussions with numerous groups around campus. His public lecture, "To the Moon and Beyond", filled Whittenberger Auditorium and was a delight for young and old. Jack's visit to Ellettsville Intermediate School was front-page news in Bloomington's daily paper *The Herald Times*. After a short presentation, Jack answered many questions in front of an audience of 5th and 6th grade gifted and talented students, while the event was piped live by closed circuit television to most of the rest of the primary school classrooms. He delivered an important message about what youth can accomplish by combining hard work toward a dream with teamwork and education. The picture above shows Jack talking with some Ellettsville students who gave him a hammer to replace the one that he threw away on the Moon.

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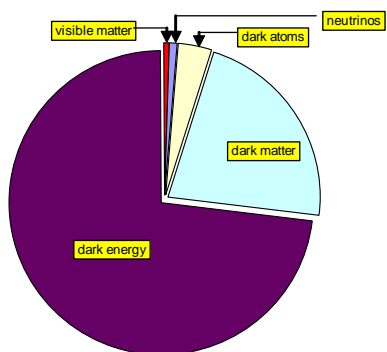
RESEARCH HIGHLIGHT

The SNAP Dark Energy Mission

During the past decade, the study of cosmology has taken its first major steps toward a precise empirical science by combining concepts and tools from astrophysics to particle physics. The most recent of these steps has brought to light major surprises. The expansion of the Universe, first discovered by Edwin Hubble in 1929, is not slowing down as would be expected as a result of galaxies interacting with one another according to the attractive force of gravity. Rather the Universe is apparently speeding up, as if there were some strange unknown repulsive force acting between galaxies. The existence of this repulsive force, or so-called “dark energy”, lies beyond the current laws of physics and its elucidation thus has profound implications for our understanding of the Universe.

This dark energy, however, should not be confused with “dark matter”, the unseen matter hiding everywhere in the Universe from our Solar System, to the halo of our Galaxy, to the vast regions between galaxies in large galaxy clusters. The nature of this dark matter has proven to be extraordinarily elusive even after decades of searches. These searches show that most of the dark matter is not “ordinary” protons, neutrons, or electrons, but rather some form of matter that has never been identified in our terrestrial laboratories. Still, dark matter is ordinary in at least one sense – it shares “attractive” gravitational interactions with ordinary matter so that pieces of dark matter and ordinary matter attract one another by their mutual gravitational attraction. What sets dark energy apart from dark matter is that pieces of ordinary matter fly apart in the presence of dark energy.

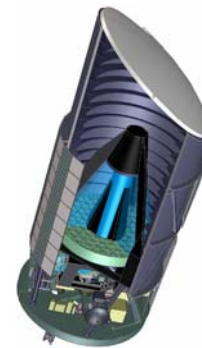
One question that has recently been answered is this: How much dark energy and how much dark matter exist in the Universe relative to the stars and galaxies we see through our telescopes – the “visible matter”? The pie chart gives the answer.



Surprisingly, visible matter is less than 1% of the make-up of the Universe. Even the ghostly neutrinos make up an almost equal fraction. Dark matter makes up about 22% of the

matter in the Universe. But most surprisingly of all, dark energy is 73% of the total – dark energy makes up almost three times as much matter/energy in the Universe as all other types combined!

One of the key experimental challenges today is to measure the physical properties of dark energy. The SuperNova /Acceleration Probe (SNAP) is a space-borne observatory designed with this objective in mind. SNAP is optimized to discover a large number of the catastrophic stellar explosions known as supernovae, most of which will be found to reside in very distant galaxies. During the past decade, the brightness of these supernova explosions has been reliably shown to be a definitive measure of their cosmic distance. By simultaneously measuring the distance to the supernova, in conjunction with its Universal speed of recession (its “redshift”), we expect that the mystery of the dark energy will be unraveled.



To achieve the main SNAP science objectives requires that the brightness of distant supernovae be measured accurately relative to the known brightness of supernovae in our local neighborhood. But to “know” the brightness of these local supernovae requires a careful calibration chain. The nearby supernovae must be compared to known local standard stars, and, as a final link in the chain, these local standard stars must be compared to lamp sources that have been accurately calibrated by laboratory measurements. This final link is complicated by the fact that the SNAP focal plane cameras have almost a billion pixels (compare this to commercial digital cameras that typically have 3-5 million pixels). The calibration strategy Professor Stuart Mufson and graduate student Nick Mostek have been developing for these focal plane cameras uses standard stars for the calibration of a subset of the pixels and then a lamp-projector system to tie the relative response of the calibrated pixels to the rest of the focal plane.

Our work at Indiana consists of two tasks. First we are using the 36-inch WIYN telescope on Kitt Peak to survey the SNAP North Field for the standard stars necessary to calibrate the subset of pixels. In this work we are observing the SNAP fields repeatedly on time scales of weeks to years to build a catalogue of non-varying calibration stars. Second we are developing an onboard calibration lamp system that uses optical and near infrared LEDs as the lamps. Our choice of LEDs is motivated primarily by their wide range of color, stability, long life, compact size, and low power

consumption, all properties important for space missions. Our ambitious goal is to characterize the LEDs to better than 2% as a function of wavelength from the optical to the near infrared. We then plan to develop an LED-based focal plane projector system to illuminate the focal plane. Here we will study variations in the projected light introduced by integrating spheres, transmission optics, and diffusers in realistic designs for wide field space imagers.

50-INCH FIRST LIGHT



SpectraBot is online! IU's new 50-inch telescope, located in the Morgan-Monroe State Forest, delivered its first images in November 2003, a sample of which is displayed above (a white light image of the Orion Nebula, also known as M42). SpectraBot is designed to perform combined unattended photometry and spectroscopy in the same instrument, a work that is still in progress. The telescope is currently completely functional for attended imaging and will be used for graduate classes and research projects.

SUMMER REU PROGRAM

Research Experience for Undergraduates



Left to Right: David Reagan, Stephanie Cortes, Jessica Windshittl, Heidi Gneiser, Josh Adams, Dustin Schwenk.

The Department's Research Experience for Undergraduates (REU) Program, funded by a grant from the National Science Foundation, completed its third summer of activities.

2004 REU student **Dustin Schwenk** of the Rose-Hulman Institute of Technology in Terre Haute is working with Caty Pilachowski to understand the chemical composition of the globular cluster Omega Centauri, the most massive and most

luminous cluster in the Milky Way. Schwenk is working with spectra from the Hydra fiber spectrograph at the Cerro Tololo InterAmerican Observatory, a sister of the fiber instrument on the WIYN telescope at Kitt Peak. After measuring the spectra, he is using the spectrum synthesis program MOOG to determine each star's composition, including the elements iron, calcium, aluminum, and europium. The results will be present at the January 2005 meeting of the American Astronomical Society in San Diego.

Stephanie Cortes, a physics major from Clemson University, is working with senior graduate student Stella Kafka in a variability study of the old open cluster NGC 188. The main goal of the project is to reveal the variable star population of the cluster, particularly the properties of the poorly studied W UMa systems. The data (acquired by Chuck Claver) consists of four successive nights of continuous CCD monitoring with the Kitt Peak 4-meter telescope. Most of the systems of interest have short periods (less than a day), which can be conveniently studied with the data in hand. The project includes finding new variables in the cluster and updating the ephemerides of the already known cluster variables.

Josh Adams, a rising senior at Iowa State majoring in Aerospace Engineering and Astronomy, is working with Kent Honeycutt and Brice Adams in the commissioning of the new 1.25-meter telescope in Morgan-Monroe State Forest. Josh has concentrated on understanding the telescope pointing, as well as the telescope alignment and focus. He has implemented an automated focus routine using a series of "postage stamp" images near focus. He is also testing whether one can use the size and shape of the out-of-focus image to determine best focus and best collimation. This telescope is expected to be used mostly in unattended mode; accurate focus and pointing are therefore critical for efficient use of this mode of operation.

During this summer, REU student **David Reagan** (Indiana) and Stuart Mufson, with graduate students Nick Mostek and Brian Brondel, have been testing the feasibility of calibrating spectrophotometric standard stars for the SNAP mission at select spectral regions in the near infrared from the ground. This calibration scheme would compare the star to a NIST calibrated light source in narrow bandpass filters known to be free of water vapor and hopefully other sources of atmospheric absorption. The tests were done using a single channel photometer built last summer at Indiana. The photometer was mounted on a Meade 8-inch telescope. They have been able to show that the $1/R^2$ law in the lab holds over an 8 meter baseline to a precision of less than 1% at both 1,050 nm and 1,200 nm. The tests were repeated in the basement of Swain Hall over a 20 meter baseline and again the $1/R^2$ law in the lab holds to a precision of less than 1%. When the two sets of measurements are combined, the overall accuracy is in the range of 1.7%. Currently they are investigating schemes to improve the accuracy of the measurements.

Heidi Gneiser from the University of Wisconsin/Whitewater and **Jessica Windschitl** from St. Mary's College investigated fundamental properties of two star clusters, M34 and NGC 7789. The students determined cluster reddening, metallicity, distance, and age using UBVR photometric data from the WIYN 0.9-m telescope at Kitt Peak. Some of the data were obtained during the students' observing run this summer, and they also reduced and analyzed data obtained during previous observing runs. During subsequent weeks, they applied psf-fitting techniques and aperture corrections using DAOPHOT II. They also worked with the standard field data, determined the transformation equations using IRAF, and standardized the cluster data. Multiple color-color diagrams (involving U) then simultaneously yielded the cluster metallicities and reddenings, and color-magnitude diagrams yielded the cluster distances and ages. Finally, the participants compared their work to previous studies of these clusters.

SPECIAL EVENTS OF THE YEAR

Venus Transit

Where were you at dawn on June 8th? For members of the IU Astronomy Department, as well as many members of the Bloomington community, the place to be was the top floor of the Atwater Garage. With much-appreciated assistance from the Stonebelt Stargazers of Bedford, the department hosted a "star party" to celebrate the transit of Venus. Also attending was **Winifred Cameron** (IU Astronomy 1952), who came all the way from Sedona, Arizona, to view the event. We were lucky to have clear weather and an excellent view of this historic transit. For those who were not able to see it, the black disk of Venus crossing the Sun was a most impressive sight!

Jill Tarter's Konopinski Lecture

In March, 2003, Dr. Jill Tarter, the Bernard M. Oliver Chair for SETI (Search for Extra-Terrestrial Intelligence) and Director of the Center for SETI Research in California visited the Bloomington campus as this year's Konopinski Lecturer, hosted by the IU Physics Department. In addition to her public lecture entitled "Life, the Universe, and SETI in a Nutshell," Dr. Tarter presented a joint Physics/Astronomy colloquium on "SETI 2020: A Roadmap for the Search for Extraterrestrial Intelligence." Dr. Tarter's talk generated a lot of interest in the IU and Bloomington communities, and her lectures were well-attended. The Astronomy Department faculty and students also enjoyed a chance to meet with Dr. Tarter informally during her visit. Dr. Tarter was named one of the 100 most influential people of the 20th Century by Time Magazine in 2003.

Fred C. Adams

Dr. Fred C. Adams (Department of Physics, University of Michigan) gave a well-attended public lecture titled "The Long Term Future of our Dying Universe" on the evening of

March 3, 2004. With his usual charming whimsy, Fred told the story of our Universe's distant future, as stars burn out, protons decay, black holes explode, and the cosmos slides slowly into darkness. Fred is the author of two interesting popular books on this subject. The first, co-authored with Greg Laughlin, is titled *The Five Ages of the Universe: Inside the Physics of Eternity* (Free Press 1999). His latest book, is *Our Living Multiverse: A Book of Genesis in 0+7 Chapters* (Pi Press 2003). In addition to his public lecture, Fred gave a colloquium on star formation.

iMARS

The School of Informatics and the Departments of Astronomy and Geological Sciences co-sponsored a public open house on the afternoon of February 23, 2004 that highlighted the exploration of Mars and NASA-related research on the Bloomington campus. The public was invited to don 3D glasses to view images from the Martian landers Spirit and Opportunity. A series of short lectures was given throughout the afternoon: Richard Durisen on planet formation, Lisa Pratt (Geological Sciences) on extremophiles and astrobiology, David Bish (Geological Sciences) on water in Martian surface minerals, and John Huffman (Informatics) on the role of Informatics in modern science. The sponsoring departments had displays in the lobby of the School of Informatics. Attendance was heavy and covered by various media.

Indiana State Fair 2004



What do the IU Astronomy Department and the World's Largest Hog have in common? They were both at the Indiana State Fair on Saturday, August 14th, 2004! Graduate students Kevin Croxall and Heather Jacobson, along with undergraduate David Reagan represented the department as part of the Indiana Space Grant Consortium/Indiana 2016 exhibit at the fair. IU's booth advertised the various telescopes used for research by IU's astronomers and undergraduates, emphasizing the Nova Search program for introductory classes. We also distributed brochures about IU Astronomy degree programs and Kirkwood Open House, along with information on how the public can learn more about Astronomy on their own, including activities for kids. Much fun and fried food was had by all. Except the World's Largest Hog, who just looked sad. And Large.

Brownie Math & Science



Brownie Math and Science took place in Swain West on November 22, 2003. This event is designed for Brownie girl scouts in grades 1-3 and has taken place in Swain West for the last thirteen years. This year 205 girls and 65 adults attended. The girls carried out hands-on science and math activities as they rotated through the participating rooms (astrobiology, astronomy, biology, chemistry, math, and physics). In one of the astronomy activities (pictured above), the girls built their own comets out of dry ice, water, dirt, ammonia and corn syrup. Faculty members, graduate students, and undergraduates from the participating departments as well as students from the School of Education helped the girls at the event. The girls found it to be a fun learning experience and came away with a very positive attitude toward science and math.

HOLY ASTEROIDS, BATMAN!

Professor Emeritus **Frank K. Edmondson** still has naming rights to some minor planets based on observations conducted at Goethe Link Observatory in the early 50's. He gave the Department a real surprise recently by letting us know, after the names were approved, that he had named minor planets after all faculty members who did not already have one of their own. The new minor planets are (5536) Mufson = 1953 TS₂, (5567) Durisen = 1953 FK₁, (5568) Honeycutt = 1955 QN, (7723) Lugger = 1952 QW, (7368) Haldancohn = 1966 BB, (8059) Deliyannis = 1957 JP, (8320) van Zee = 1955 RV, (9143) Burkhead = 1955 SF, and (9144) Hollisjohnson = 1955 UN. Frank had earlier named an asteroid after Caty Pilachowski, namely (17025) Pilachowski = 1999 ES5. Of course, Frank and Margaret Edmondson have their own, (1761) Edmondson = 1952 FN, (4300) Marg Edmondson = 1955 SG1. An honor like this does not fall from the sky every day! Thanks, Frank!

UPCOMING EVENTS

Fall Patten Lectures by Geoff Marcy

In Fall 2004, Professor Geoffrey Marcy of the University of California at Berkeley will be visiting the IU campus as a distinguished Patten Lecturer. Dr. Marcy is well-known for discovering many of the 100+ extra-solar planets known to be orbiting other stars. Dr. Marcy will be visiting during the

week of Oct. 10th and will present a joint Physics & Astronomy colloquium, as well as two Patten Lectures. He will also be available to meet with students and faculty. Dr. Marcy has opened the imaginations of people worldwide with his vision of worlds beyond our own and is an extraordinarily popular speaker wherever he goes. Please check the Department's web site for the dates and times of his lectures.

GRADUATE DEGREES

Brian Rebel successfully defended his Ph.D. dissertation entitled "Neutrino-Induced Muons in the MINOS Far Detector" on August 2, 2004. Brian worked under the direction of Stuart Mufson. The dissertation was a search for the parameters governing oscillations of muon neutrinos into tau neutrinos. Using the first 231 days of data from the MINOS far detector, he found a total of 50 muons that were produced by neutrino interactions in the rock surrounding the detector. The data were found to be consistent with both the null oscillation hypothesis and oscillations in the range allowed by the Super Kamiokande and MACRO results at 90% confidence. The muons were also separated by their charge sign to compare the oscillation probabilities for neutrinos to those for anti-neutrinos in a search for violation of CPT conservation. The data are consistent with CPT being conserved at the 68% confidence level. Brian has accepted a position as a Research Associate at Fermilab to continue working on the MINOS experiment. At the same time he has been named head of the Enforcement Squad for Asteroid Mufson, and he is actively recruiting members for that organization.

Shawn Slavin received his Ph.D. in Astronomy from Indiana University in December 2002. His dissertation, entitled "Hubble Space Telescope Observations of Core-Collapsed Globular Clusters," documents an investigation of the structure and content of the cores of the globular clusters NGC 6284 and NGC 6293, validating prior ground-based observations by his advisors Haldan Cohn, Phyllis Lugger, and collaborators. Shawn is now an Assistant Professor of Physics and Astronomy at Purdue University Calumet, in Hammond, IN, near Chicago. He teaches physics and astronomy courses there with colleague, and former IU Astrophysics Ph.D., Dr. Megan K. Pickett. Shawn's research is focused on stellar dynamics in globular clusters. He lives with his wife Lisa and children Zoe (10) and Tristan (8) in Valparaiso, IN. Shawn can be reached by e-mail at: slavin@purdue.edu.

Nick Mostek received his Master of Arts degree in Astronomy in the Spring of 2003. Nick's research activities center around the calibration of the SNAP telescope, including the development of an onboard calibration light system and the location of stable standard stars. Nick also aspires to someday be the largest development contractor on Asteroid Mufson with a primary interest in mineral mining and time shares.

UNDERGRADUATE DEGREES

Jean Brigham received her B.S. in Astronomy & Astrophysics degree in Spring 2003.

Lisa Johnston received her B.S. in Astronomy & Astrophysics degree in Spring 2003.

Sandi Koons received his B.S. in Astronomy & Astrophysics degree in Fall 2003.

Luis Mercado (B.S. Astronomy & Astrophysics 2004) will be attending graduate school at the University of Massachusetts in Fall 2004.

Tyler Pinizzotto received his B.S. in Astronomy & Astrophysics degree in Spring 2004.

Robert Waddle received his B.S. in Astronomy & Astrophysics degree in Spring 2004.

AWARDS

Liese van Zee has been awarded an NSF CAREER grant titled "SMUDGES: A Survey for Dwarf Galaxies in the Local Universe." This five year grant will fund observations and analysis of the SMUDGES survey (see the 2002 *Newsletter* for a description of SMUDGES). In addition, this grant will fund several initiatives to further integrate research and education in undergraduate courses for astronomy majors.

The Indiana Academy of Science has given its "2003 Distinguished Scholar Award" to **Frank K. Edmondson**. He is the sixth person to receive this award, which was given for the first time in 1995. Previous IU recipients were: Charles B. Heiser, Jr. (Biology), Ernest R. Davidson (Chemistry) and Harry G. Day (Chemistry). IU Professor Daniel Kirkwood was one of the nine founders of the Academy in 1885, the year before he retired.

Graduate student **Heather Jacobson** of the Astronomy Department has received a prestigious National Science Foundation Graduate Fellowship to support her work on the compositions of old star clusters and the chemical evolution of the galactic disk. Jacobson first came to IU as one of our Research Experience for Undergraduates students in Summer 2002, working with Con Deliyannis on the color-magnitude diagrams of galactic clusters. She returned in February 2003 to work with Con and with Caty Pilachowski, supported by their NSF grants, and began graduate studies with us in August, 2003. Jacobson received one of IU's Women in Science Fellowships in 2003 as well.

Allen Rogel was the recipient of a \$10,000 Indiana Space Grant Consortium Doctoral Fellowship to support continued research with the ChaMPlane Project (see the 2003 *Newsletter*). The Project is a survey of Galactic X-ray sources using both the Chandra X-ray Observatory and ground-based telescopes, including WIYN. Specific targets of interest are cataclysmic variable stars and other accretion-powered objects.

Steven Margheim has also been awarded a \$10,000 Doctoral Fellowship from the Indiana Space Grant Consortium for his work on stellar abundances. Steven is working toward improving the precision of stellar abundances by using high-quality data sets of open clusters from the Mayall and WIYN telescopes as part of the WIYN Open Cluster Study (WOCS). These improved abundances will be used to look for possible chemical signatures of planet formation in stars with planets as well as examining abundance determination methods (in field stars and cluster stars) for possible biases that could masquerade as or hide the very abundance signatures that are being sought.

Tyler Poniatowski received the 2004 Astronomy Alumni Award for Overall Academic Excellence.

William Kopp received a Department of Astronomy Outstanding Staff Award for excellent performance in the renovation of Kirkwood Observatory 12-inch telescope, and **Brice Adams** received a Department of Astronomy Outstanding Staff Award for excellent performance in installation and commissioning of the Morgan-Monroe Forest Observatory 50-inch telescope. Both staff awards were funded through a generous gift from Hollis and Grete Johnson.

Stella Kafka and **Brian Rebel** received 2004 Hollis and Grete Johnson Awards for Excellence in Student Research.

FACULTY NEWS

The year 2004 brought **Hollis Johnson** and his family many reasons to celebrate. In May, the tenth anniversary of his retirement from Indiana University, their oldest daughter (Carol) received a Ph.D. degree, a grand daughter (Charla) received a JD degree, and both a grandson and a grandson-in-law received baccalaureate degrees, all from Indiana University. In June, Hollis and Grete celebrated their Golden Wedding Anniversary with family and friends in Bloomington, St. Louis, and Denmark. During the year and a half Hollis and Grete Johnson worked with China Charity Federation (CCF) in Beijing as volunteers representing LDS Charities, they were asked by CCF to write a book about charity in China. They did so (in English), based partly on their own experiences and partly on their research. The book *Charity in China* has since been translated, and it was published (in both languages) in May by China Charity Federation with support from General Motors, China. Its goal is to inform the world of some of the problems and progress in that great nation. Hollis spent July in Beijing, China where he taught (in English) a three-week intensive course in Stellar Atmospheres to 23 advanced undergraduates at Peking University.

Martin Burkhead and his wife Barbara continued visits to National Parks to encourage the Rangers to include some astronomy in their evening talks. Many Rangers are under the impression that astronomy requires telescopes! The eye is

pretty good and can't be beat for the grand view of the Milky Way. Martin gave evening talks on the Mars missions and the Cassini mission to Saturn. When possible, Barbara told constellation stories. Our National Parks are beginning to understand that part of their park lies overhead. They are aware of the uniqueness of their dark night skies, and they are even beginning to boast of their skies. Martin's mantra is "If you have it - flaunt it!" Martin and Barbara are subscribing to the Dark-Sky Newsletter and also the Abrams Planetarium Sky maps for several of the National Parks. A first draft of a Ranger handout on the Milky Way was used this past summer. It will be revised for use next summer. Most visitors and even park personal have never seen the Milky Way and have no idea what it is!

PASSINGS

The Astronomy Department was very saddened to learn that undergraduate student **Gabriel Benman** passed away suddenly over the summer. Although he was a Physics major, Gabriel had been working on research projects with Caty Pilachowski for the last two years. He had recently completed work on the abundance of elements in the globular cluster M13 using data obtained from the Hydra multi-fiber spectrograph on the WIYN telescope. Gabriel enjoyed visiting the WIYN telescope in Spring 2004 and would have begun his senior year at IU this fall. We will miss him.

Jim De Veny died on May 30. He was one of Martin Burkhead's first students. After finishing his M.A. degree "An Improved Technique for Photoelectric Measurements of Faint Stars" in 1967 he joined the staff of Kitt Peak and became Leader of the Kitt Peak Instrument Support Group. Over several decades, if you observed at Kitt Peak, you had Jim to thank for the instrumentation - especially the spectrographs on the 4-meter. Jim retired in 1999 and moved to Silverton, Colorado. Few of us will leave a legacy of service to astronomy that can match Jim's. Condolences may be sent to his wife, Maureen De Veny, Box 351, Silverton, CO 81433. The family requests that any desired donations in Jim's memory be made to one of the following charities: Hillside Cemetery Fund, PO Box 115, Silverton, CO 81433; San Juan County Ambulance & EMT Fund, PO Box 493, Silverton, CO 81433. A permanent memorial to Jim on Kitt Peak is also being planned, for which donations may be sent to the Kitt Peak Director's Office.

Robert L. LaFara (M.A. Astronomy 1950) died on May 17 at an age of 78 years. His life was commemorated in a service at Oaklandon Unitarian Universalist Church on May 23. He was a mathematician for Naval Avionics for 35 years, retiring in 1987, and he was a member of the Indianapolis Computer Society. Robert is survived by wife Ella "Betty" Dyer LaFara, four daughters, and three grandchildren. The family can be contacted by email at Betty@LaFara.com

ALUMNI NEWS

Dr. John Jurcevic (Ph.D. Astrophysics 1998) began a new position as Assistant Professor in Fall 2003 in the Physics Department of Susquehanna University, 514 University Ave. Selinsgrave, PA 17870. John's email address is jurcevic@susqu.edu.

Mr. Phil Malicki (B.S. Astrophysics 1979) and wife Nancy live on Long Island with their four boys, where Phil is a Certified Planner and Environmental Scientist (M.S. Earth Science 1985, Adephe College). His email address is pmalicki@msn.com.

Megan K. Pickett (Ph.D. Astrophysics 1995) received tenure and promotion to Associate rank at Purdue University Calumet. She is Physics Coordinator for the Department of Chemistry and Physics.

Mr. George Turner (B.S. Astronomy & Astrophysics 1986) principal systems programmer and administrator for UITs, has been named one of two Outstanding Professional Staff Members on the Bloomington Campus for AY 2003-2004. George currently leads the projects team for the AVIDD Linux clusters, one of the largest supercomputing systems in the US. His email address is turnerg@indiana.edu.

Dr. Peter A. Wehinger (M.A. Astronomy 1962) and his wife Dr. Susan Wyckott live in Tucson, Arizona. Peter earned his Ph.D in Astronomy at Case Western Reserve in 1966 and now works at Steward Observatory fulltime as a staff astronomer and Director of Development. Projects which take most of the his time now are Mirror Lab and Large Binocular Telescope. His email address is pwehinger@as.arizona.edu.

Mr. Matt Wimmer (B.S. Astronomy & Astrophysics 2003) is a teaching assistant at the University of Alabama pursuing a doctorate in Physics. His email address is wimme001@bama.ua.edu.

GIFTS

If you would like to discuss a gift or bequest to Indiana University, please contact the Development Office in the College of Arts and Sciences, Tom Herbert, Director, (812) 855-6276.

TELL US ABOUT YOURSELF

Pass along the latest about yourself for our newsletter. Contact the Astronomy Department by regular mail or send me an email at durisen@astro.indiana.edu. You can also send your news notes to The Indiana University Alumni Association, P.O. Box 4822 Bloomington, IN 47402-4822.

WEBSITE

Be sure to visit our Web site to keep updated on news and activities within the Department. www.astro.indiana.edu.



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