



Science Scene

Research Report

October 2004 to February 2005

A Publication of the College of Science, Utah State University

The Dean's Corner

There are two changes in the works here in the Dean's office that will have a significant impact on faculty research within the College of Science. First, I am pleased to announce that Kellie Hedin, the Sponsored Programs Administrator for the College of Science, has moved into the Dean's office. This will permit "one-stop" service for faculty with SPO-1 forms and with other needs related to research proposals, such as the review of preliminary budgets and obtaining various approvals. Kellie is located in ESLC #254A, the first office to the right as you enter the Dean's office area. Kellie can be reached by phone at 797-0470 or by email at <kellie.hedin@usu.edu>. The second significant change will be noticed when the second associate dean's position is filled. As you may have seen from the position description, this position has been restructured to include major responsibilities related to research and faculty development. The selection committee will be meeting soon and we should have an announcement of the new associate dean by the end of March.

As many of you know, John Raitt, head of the Department of Physics, will be retiring this June. I have had the pleasure of working with John for many years, as a fellow department head and now as dean. John is an excellent teacher and researcher, and as a department head, a tireless advocate for his department, always sensitive to the needs of his faculty, staff, and students. After interviewing all department faculty and staff earlier this semester, I am pleased to announce that Jan Sojka will be the new department head effective July 1. Jan has an outstanding background in both teaching and research and we look forward to working with him in the years to come.

As I mentioned in the previous issue, we would like to highlight research support services and instrumentation available in various departments and units within the College of Science and elsewhere on campus. If you are aware of instruments and services that other faculty might be interested in, please pass the word on to us so we can present this information in future issues.

Please send any comments or suggestions related to the items above to me via email at <don.fiesinger@usu.edu>. Also, if there are other research-related issues that you would like to see presented in Science Scene, contact me as well.

— COLLEGE OF SCIENCE CONTRACTS & GRANTS ACTIVITY —

Amounts (# of proposals)	Dec 04	Jan 04	Cumulative Totals for FY 04 - 05
Proposals Submitted	\$1,751,789 (7)	\$2,496,279 (11)	\$20,410,131 (77)
Awards Received	\$280,182 (3)	\$957,334 (9)	\$5,645,970 (62)



**College of Science
Awards Program**

April 21, 2005
Eccles Conference Center - Auditorium (Rm 216)
Program 3:30 - 4:30 pm
Reception following in Room 205-207
4:30 pm - 5:30 pm

*The outstanding performance of our
students and faculty will be recognized*

**Department of Physics
Lecture & Demonstration for the General Public**

Dr. David Wall
in connection with the Utah-Idaho Chapter of AAPT
Meetings in Salt Lake City March 25th & 26th
will visit Utah State and present a lecture & demonstration
to the general public on
"The Physics of Magic & the Magic of Physics"

Tuesday, March 22nd — 7:30 pm
at the ESLC Auditorium.

For more information about the presentations see <http://www.analogpress.com/magic/>

STAFF ACTIVITIES

Staff Awards & Recognition

On 2 November 2005, **Liz Allred** received a Diversity Award in the Staff Category at the 11th Annual Diversity Awards.

STUDENT ACTIVITIES

Student Awards, Recognition & Grants

Biology

On 19 September 2004 in Fort Worth, Texas, **Kristin Bakkegard**, a Commander in the U.S. Naval Reserves and PhD student in **Butch Brodie's** lab, assumed command of her unit in the U.S. Naval Reserves. Kristin spent ten years in active duty before joining the Reserves. Her unit was mobilized in December 2003 and deployed to Kuwait in March 2004 in support of Operation Enduring Freedom/Iraqi Freedom. Kristen is an Eccles Fellowship recipient and she is now back stateside and will resume working on her Ph.D.

Biology undergraduate, **Ryan Jackson** (working in **Joe Li's** lab) was awarded an URCO grant titled "The Effectiveness of Antiviral Agents Against Blue Tongue Virus." Ryan will receive \$400 from the Vice President for Research office, as well as some matching funding from his faculty mentor.

Jeffrey Luke was chosen as the College of Science Valedictorian at the first USU fall graduation. Jeff graduated summa cum laude in composite teaching—biological sciences with a minor in chemistry teaching. He served as a biology tutor and plans to teach at the high school level before pursuing a graduate degree in science education. Jeff selected Associate Professor Greg Podgorski as his faculty escort for the graduation ceremonies.

Physics & Center for Atmospheric & Space Sciences

Joshua Herron received an Outstanding Student Paper Award for his presentation, "An Earlier Lidar Observation of a Noctilucent Cloud Above Logan, Utah," at the 2004 Space Physics & Astronomy Section of the Geophysical Union Fall Meeting, San Francisco, California, 13-17 December 2004. This award will also be announced in an upcoming *EOS* publication. In addition, Joshua will receive a formal Certificate of Achievement.

The following presentations were also given at this meeting:

Eric M. Lundell and Vincent B. Wickwar. Poster titled "Rayleigh-Lidars Observations of Mesospheric Mid-Latitude Density Climatology Above Utah State University."

Kris M. Thomas, Joshua P. Herron, and Vincent B. Wickwar. Poster titled "Mesospheric Inversion Layers Above Utah State University."

Troy A. Winn, Joshua P. Herron, and Vincent B. Wickwar. Poster titled "Comparisons of Long-Term Trends and Variability in the Middle Atmosphere."

FACULTY ACTIVITIES

Visiting Scholar Dong-Soon Yoo

Home Institution: Professor, Department of Physics, Changwon National University, Cangwon, South Korea.

Research project or interests: Energy- and angle-resolved electron emission spectroscopy.

Name of USU Collaborator: JR Dennison, Physics

Length of Visit: August 2003 – February 2005

Faculty Awards & Recognition

Biology

Anne Anderson's, Charlie Miller's, and Joanne Hughes' research is featured in the current *Utah State Today*. Collaborating with engineering professor, Ron Sims, they are researching ways to clean up contaminated land around the world. Go to <http://www.usu.edu/ust/index.cfm?ArticleID=2163> for the full article.

Jay Karren received a Meritorious Award from the Utah Mosquito Abatement Association for providing valuable services to the mosquito abatement districts throughout the State of Utah.

Charles Miller, Anne Anderson, Ronald Sims, and Joanne Hughes have been notified that the U.S. Department of Energy's Joint Genome Institute will sequence the genomes of five mycobacterial isolates with bioremediation abilities. These mycobacterium isolates break down high molecular weight polycyclic aromatic hydrocarbons (PAHs) to the harmless molecules of water and carbon dioxide. This bacterial genome sequencing effort is the result of collaboration between Utah State's Biology and Biological and Irrigation Engineering (BIE) Departments and will begin in 2005.

Dennis Welker was named the 2004 Outstanding New Faculty Advisor by the Utah State University Advising and Transfer Services. The award recognizes faculty advisors who have been in their position for five years or less. Dennis was appointed director of Undergraduate Studies in July 2003. They will also nominate him for a National Academic Advising Award.

Chemistry & Biochemistry

Ann Aust has accepted a position as the Associate Vice President for Research here at Utah State University. She will maintain a part-time association as a member of the Department of Chemistry & Biochemistry.

Stephen E. Bialkowski spent July 2004 working with scientists at the Environmental Molecular and Sciences Laboratory of Battelle Pacific Northwest National Laboratory in Richland, Washington. He was working on a collaboration to design organophosphate pesticide detection using photo thermal and surface acoustic wave spectrometry.

Mathematics & Statistics

Richard Cutler and Vance Grange (School of Accountancy) and their co-authors received an award including a cash prize of \$1,000 from the Certified Financial Planner's (CFP) Board for their paper titled, "Factors Associated with Success on the CFP Certification Examination" that was published in Volume 12 of *Financial Service Review*.

Faculty Grants

Biology

Bruce Hayden, Chaitan Baru, Carol Brewer, Debra Estrin, Jerry Franklin, Jeff Goldman, Kris Krishtalka, James A. MacMahon, and Bill Michener
National Science Foundation
1 September 2004 – 31 August 2006—\$6 million
"Development of the NEON Coordinating Consortium and National Project Office."

On 21 September 2004, NSF announced a two-year, \$6 million cooperative agreement between NSF and AIBS to set up a National Ecological Observatory Network (NEON) Design Consortium and Project Office (see <http://www.neoninc.org>). The office will develop a blueprint for the network and a plan for its implementation. **Jim MacMahon** was instrumental in forging this agreement and will continue to work on NEON's design as a member of the Senior Management Team. Jim is also executive committee chair of the Intermountain Region Observatory Network (IRON), one of fifteen regional groups of NEON, which includes Utah State.

Geology

James Evans and Kent Perry
Gas Technology Institute
1 October 2004 to 30 November 2004—\$60,000
"Quantification of Geologically Controlled Gas Leakage From Gas Storage Fields."

James Evans, John Schmidt, and John Dohernwend
National Center for Airborne Laser Mapping - Seed Project Program
1 March 2005 to 1 July 2005—\$25,000
"Conduct a High-resolution Airborne Laser Mapping Survey of the Colorado River Delta near Hite, Utah."

James Evans, John Schmidt, and John Dohernwend
National Science Foundation
1 September 2004 to 28 February 2005—\$9,800
"Preliminary Examination of the Effects of Rapid Lake-level Fall at the Colorado River Delta in Lake Powell, Utah."

Mathematics & Statistics

Thomas C. Edwards, Jr., D. Richard Cutler, and Karen H. Beard
USGS National Park Monitoring Project
1 January 2005 to 30 September 2005, \$44,926
"Predicting Invasive Plant Species Occurrences in National Parks: A Process for Prioritizing Prevention."

Zhi-Qiang Wang

National Science Foundation
1 April 2004 to 31 March 2006—\$20,100
"International: Variational Methods in Quasilinear Partial Differential Equations."

Physics & the Center for Atmospheric & Space Sciences (CASS)

Bela G. Fejer

Northwest Research Associates, Inc.
10 August 2004 to 9 August 2005, \$25,000
"Subcontract to Participate in LWS Proposal entitled Exploration and Modeling Studies of Potential Gravity Wave Seeding of Plasma Dynamics at Equatorial Latitudes."

Robert W. Schunk

National Science Foundation
01 August 2004 to 31 July 2007, \$465,000
"A Physics-Based Data Assimilation Facility for the Ionosphere-Plasmasphere-Polar Wind System."

Jan J. Sojka

National Science Foundation (with Math)
1 September 2004 to 31 August 2008, \$679,154
"Statistical Wavelet Analysis and Indices Development of the Magnetosphere-Ionosphere Current System Observed by the Terrestrial Magnetometers."

Michael J. Taylor

University of Washington
16 May 2004 to 31 May 2005, \$78,538
"Subcontract to University of Washington for Balloon-Borne Sprite Measurements."

Michael J. Taylor

Northwest Research Associates, Inc.
10 August 2004 to 9 August 2005, \$65,000
"Subcontract to University of Colorado to Participate in LWS Research Project entitled Exploration and Modeling Studies of Potential Gravity Wave Seeding of Plasma Dynamics at Equatorial Latitudes."

Michael J. Taylor

SETI Institute
30 September 2004 to 30 April 2005, \$22,052
"Hyperseed MAC: An Astrobiology Mission to Study Carbon Ablation and the Conditions for Prebiotic Chemistry in Natural Meteoroids as Mimicked by the Reentry of the Sample Return Capsules."

Faculty Presentations & Related Professional Activities

Biology

Mary E. Barkworth was an invited participant in an NSF-sponsored workshop on developing a herbarium network, both digital and human. The workshop was held at Michigan State University, East Lansing, Michigan, 20-21 October 2004.

James Cane presented a talk titled "Exposing their Progeny: Using X-rays and Observation Nests to Study and Manipulate Cavity-nesting Bees" at the 8th International Bee Research Association in Tropical Agriculture and the VI Latin American Bee Research meetings, Ribeirao, Brazil, 6-10 September 2004.

James Cane presented a talk titled "Managing Non-social Bees for Agriculture" to the Department of Biology, Federal University of Parana, Curitiba, Brazil, 17 September 2004.

James Cane presented a poster titled "Pollination Needs and Promising Pollinators for Great Basin Forbs" at the Intermountain Native Plant Summit, Boise, Idaho, 2-4 November 2004.

Joseph K.-K. Li gave a talk titled "Influence of the Science Teacher on the Student's Future Choice of a Career in Science" at the China High School Science Teacher Symposium, Beijing, China, 16 July 2004.

Joseph K.-K. Li organized and served as the international liaison for the 10th Annual Meeting of the Society of Chinese Bioscientists in America (SCBA), Beijing, China, 18-23 July 2004. Over 2,200 participants attended the meeting and Dr. Li organized six keynote presentations, 52 workshop sessions, and five roundtable discussions. Dr. Li also assisted in the organization of the Tri-Conference and Bio-Forum 2004: Medicine in the 21st Century, Shanghai, China, 25-27 July 2004. Approximately 1,200 participants attended.

Mark Miller presented a paper titled "Detection of Genetic Markers Associated with Whirling Disease in Rainbow Trout" at the 11th Annual Whirling Disease Symposium, 3-4 February 2005, Denver, Colorado.

Vijendra K. Singh presented a paper titled "Age-related Changes of Amyloid Beta-protein1-40 in Healthy Volunteers, Autistic Children and Alzheimer's Patients" at the 5th Neurobiology of Aging Conference, San Diego, California, 21-22 October 2004.

Vijendra K. Singh and **Jeff Hansen** presented a paper titled "Profiling Mercury-induced Biomarkers of Autoimmunity in Autistic Children" at the 34th Annual Meeting of the Society for Neuroscience, San Diego, California, 23-27 October 2004.

Paul G. Wolf presented a research seminar titled "Evolution of Land Plants" to the Biology Department at the University of Washington, Seattle, Washington, 30 September 2004.

Paul G. Wolf gave a research seminar titled "Plant Phylogeny and the Evolution of Organellar Genomes" at Duke University, 3 February 2005, Durham, North Carolina.

The following talks were given at the 10th Annual Meeting of the Society of Chinese Bioscientists in America (SCBA), Beijing, China, 18-23 July 2004:

Yi-rui Gui, Chang-yuan Dong, Joseph K.-K. Li, Weiyang Zhang, and Jun Liu. "Characteristics of the 5'-NCR of Segment 7 of Bluetongue Virus HbC₃ Strain."

Jun Hu, Chang-yuan Dong, Joseph K.-K. Li, Dong-e Chen, An-tao Xiao, and Jun Liu. "The Study on the Infectivity of Bluetongue Virus Strain HbC₃ to Several Human and Animal Tumor Cells."

Joseph K.-K. Li, Maggie K. Buccambuso, Gary T. Miller, L.Y. Lee, and Justin Hoopes, Valerie D. Hubbard, Dale L. Barnard, and Richard W. Sidwell. "Development of a Highly Sensitive RT-PCR Assay for the Screening and Identification of Potential New Antiviral Agents Against Pichinde Virus."

The following presentations were given at the 52nd Annual Meeting of the Entomological Society of America, Salt Lake City, Utah, 14-17 November 2004:

Diane Alston. Poster titled "Optimizing Cherry Fruit Fly Trapping and Evaluation of Insecticides for Fruit Fly Control."

Colin Brammer and Carol von Dohlen. Paper titled "Phylogeny of Clitellariinae: Gateway to the Stratiomyidae (Diptera)."

James Cane. Paper titled "Bees and Seed Production for Native Plant Restoration in Wildlands."

Nicole Davidson and Edward Evans. Paper titled "Frass Analysis to Determine the Diet of the Predator *Coccinella septempunctata* L. (Coleoptera: Coccinellidae)." Nicole won 2nd place in the student competition for paper presentations on Biological Control.

Edward Evans. Paper titled "Variations on a Theme of Aphidophagy: Ladybirds in Utah Alfalfa."

Terry Griswold. Paper titled "Patterns of Bee Biodiversity in North America."

Christelle Guédot, Theresa Pitts-Singer, Jordi Bosch, and William Kemp. Paper titled "Use of Olfactory Cues for Individual Nest Recognition in Two Solitary Bee Species *Osmia lignaria* Say and *Megachile rotundata* (F.) (Hymenoptera: Megachilidae)."

Craig Huntzinger. Paper titled "Incorporating Fungicides into *Megachile rotundata* (Hymenoptera: Megachilidae) Provisions to Control Chalkbrood Disease."

Rosalind James. Paper titled "Diseases in Managed Bees."

Yukie Kajita and Edward Evans. Paper titled "Effects of the Key Predatory Ladybird, *Harmonia axyridis*, on Larval Performance of Aphidophagous Insects in the Field."

Erik Pilgrim and James Pitts. Poster titled "Matching Males to Females in Velvet Ants Using DNA Sequence Data." (Erik won 1st place in the student competition for display presentations on Systematics, Morphology, and Evolution.)

James Pitts and Carol von Dohlen. Poster titled "A Cladistic Morphological Analysis of the Pompilidae (Hymenoptera)."

Theresa Pitts-Singer. Paper titled "Management of Alfalfa Leafcutting Bees over Four Decades."

Carol von Dohlen, Erik Pilgrim and James Pitts. Poster titled "Molecular Phylogeny of the Pompilidae (Hymenoptera) Based on Combined Analysis of Three Nuclear Genes."

The following presentations were made at the Conference on Modulation of Chemosensory Signaling, Jackson, Wyoming, 21-24 January 2005:

Catherine A. Burks, Dane R. Hansen, Nathan G. Putnam, J. Ryan Taylor, and Timothy A. Gilbertson. “Modulation of the Aldosterone-regulated Salt Transduction Pathway by Changes in Dietary NaCl.”

Timothy A. Gilbertson, Arian Baquero, Catherine A. Burks, Dane R. Hansen, and Kristina J. Spray. “Mechanisms for Short-term Regulation of Salt and Water Taste.”

Chemistry & Biochemistry

Stephen E. Bialkowski presented a paper titled “Photothermal Lens Spectrometry in Sub-Nanoliter Sample Cells” at the 31st Annual Federation of Analytical Chemists and Spectroscopists Societies Meeting, Portland, Oregon, 3-7 October 2004.

Steven T. Frey and Richard C. Holz presented a poster titled “Encapsulation of *Aeromonas Proteolytica* Aminopeptidase in a Layered Double Hydroxyl Clay” at the 78th American Chemical Society Colloid and Surface Science Symposium, New Haven, Connecticut, 20-23 June 2004.

Richard C. Holz presented a talk titled “Metal-Mediated N-Terminal Peptide Hydrolysis: Insight into the Mechanism of Methionyl Aminopeptidases” at the Department of Chemistry, University of Illinois at Chicago, Chicago, Illinois, 27 April 2004.

Richard C. Holz presented a talk titled “Co-Catalytic Metallopeptidases as Pharmaceutical Targets” at the Department of Chemistry and Biochemistry, University of Texas at Austin, Austin, Texas, 29 April 2004.

Tapas Kar presented a talk titled “Functionalized Carbon Nanotubes – Theoretical Models and Methods” at the Wright-Patterson Air Force Research Lab, ML Division, Dayton, Ohio, 13 August 2004.

Tapas Kar participated at the Horizon 2004 Conference presenting a project titled “Pilot Program for Nanotechnology Initiative at Utah” He was also invited as a panelist by Technology to Market (T2M) Organization at this same conference, University of Utah, Salt Lake City, Utah, 11-13 October 2004.

The following presentations were made at the joint American Chemical Society 50th Northwest and 18th Rocky Mountain Regional Meeting, Logan, Utah, 6-9 June 2004:

Richard C. Holz. Talk. “Molecular Discrimination of Type-I Over Type-II Methionyl Aminopeptidases.”

Richard C. Holz. Talk. “Both Nucleophile and Substrate Bind to the Catalytic Fe(II)-Center in the Type-II Methionyl Aminopeptidase from *Pyrococcus Furiosus*.”

Wade C. McGregor and Richard C. Holz. Poster. “Regulation of the Zn(II) Ion Lewis Acidity by a Second-Sphere Aspartate Residue in the Leucine Aminopeptidase from *Vibrio preteolyticus*.”

Sanghamitra Mitra and Richard C. Holz. Poster. “Substrate Specificity of the Methionine Aminopeptidase from *Escherichia coli*.”

Sergey Rozhok, Chang Liu, Chad A. Mirkin and Richard C. Holz. Poster. “Fabricating Microarrays of Motile Bacteria.”

Sabina I. Swierczek, Sergey Rozhok, Ania M. Holz, Chad A. Mirkin, and Richard C. Holz. Poster. “The Use of DPN to Prepare Motile Bacterial Microarrays.”

Vinnie Zachary and Richard C. Holz. Poster “Substrate Specificity and Kinetic Parameters of the D-aminopeptidase from *Bacillus subtilis*.”

Geology

James Evans gave a talk titled “Fluid Flow in ‘Sealed’ Faults: Flow of Water, Oil, and Gas in Shale-rich Faults, Colorado Plateau” to the Geology and Geophysics Department at Texas A&M University, College Station, Texas, 21 October 2004.

James Evans, Ben van der Pluijm, and Teng Fong Wong convened a workshop titled “SAFOD (San Andreas Fault Observatory and Depth) Sample Analysis Mini-workshop” as part of the Earthscope Project, San Jose, California, 8-9 October 2004.

Joseph Jacobs and James Evans presented a poster titled “How Do Faults Grow?” at the Southern California Earthquake Center Annual Meeting, Palm Spring, California, 19-23 September 2004.

Alexander Steely, Susanne Janecke, Rebecca Dorsey, and Gary Axen presented a poster titled “Evidence for Late Miocene-Quaternary Low-angle Oblique Strike-slip Faulting on the West Salton Detachment Fault, Southern California” at the Rocky Mountain/Cordilleran Geological Society of America region meeting, Boise, Idaho, 3-5 May 2004.

The following papers were presented at the Annual Meeting of the Geological Society of America, Denver, Colorado, 7-10 November 2004:

Laura De Grey and Carol Dehler. “Stratigraphic Investigations of the Neoproterozoic Uinta Mountain Group: Combating ‘The Curse of the Proterozoic Sandstones’.”

Carol Dehler and Joel Pederson. “Geologic Mapping in the Carlsbad Area, Southeastern New Mexico: Implications for Water Issues in the Lower Pecos Region.”

Rebecca Dorsey, Susanne Janecke, Stefen Kirby, Gary Axen, and Alexander Steely. “Pliocene Lacustrine Transgression in the Western Salton Trough, Southern California: Implications for Regional Tectonics and Evolution of the Colorado River Delta.”

Scott Friedman, Xinshe, Benjamin Kessel, and Bradley Ritts. “Analysis of the Chifeng Basins, Inner Mongolia: Implications for Basin Modeling and Cretaceous Extension in Northeast China and Southern Mongolia.”

John Gosse, Eric McDonald, Joel Pederson, Lisa Stockli, and Guang Yang. “Oxygen Isotope Stage 4 Sediment Dominates the U.S. Southwest Alluvial Record.”

Susanne Janecke. “Translation and Breakup of Supradetachment Basins: Lessons from Grasshopper, Horse Prairie, Medicine Lodge, Muddy Creek and Nicholia Creek Basins, Southwest Montana.”

Susanne Janecke, Stefen Kirby, Victoria Langenheim, Bernard Housen, Rebecca Dorsey, Robert Crippen, and Ronald Blom. “Kinematics and Evolution of the San Jacinto Fault Zone in the Salton Trough: Progress Report from the San Felipe Hills Area.”

Benjamin Kessel, Scott Friedman, Bradley Ritts, Kevin Randall, and Dustin Keele. “Lower Paleozoic Deposystems and Stratigraphy of the Western North China Block.”

Stefen Kirby, Susanne Janecke, Rebecca Dorsey, Bernard Housen, and Kristin McDougall. “A 1.07 Ma Change from Persistent Lakes to Intermittent Flooding and Desiccation in the San Felipe Hills, Salton Trough, Southern California.”

Rob Mackley and Joel Pederson. “Relating Rock Strength Controls to Large-scale Variations in the Colorado River’s Profile, Glen and Grand Canyons, Utah and Arizona.”

Joel Pederson. “Drainage Integration as a First-order Control on the Erosional Exhumation of the Interior West—the Example of the Green River and the Uinta Mountains.”

Joel Pederson, Matt Anders, Tammy Rittenhour, Warren Sharp, and John Gosse. “Linkages and Lagtimes Between the Desert Hillslopes and Streams of Grand Canyon During Responses to Glacial-interglacial Climate Changes.”

John Schmidt. “Modern Channel Change in the Colorado River System: A Mandate for Restoration?”

Betty Skipp, Susanne Janecke, Larry Snider, and Mel Kuntz. “Geologic Map of the Arco 30’ X 60’ Quadrangle, South-central Idaho.”

Alexander Steely, Susanne Janecke, Rebecca Dorsey. “Evidence for Syn-depositional Folding of Imperial-age Synrift Deposits above the West Salton Detachment Fault, Borrego Mountain Area, Southern California.”

Mathematics & Statistics

David Edward Brown gave a talk titled “Bipartite Probe Interval Graphs, Circular Arc Graphs, and Interval Point Bigraphs” at the Rocky Mountain Discrete Math Days, Colorado Springs, Colorado, 7 August 2004.

Byung Soo Moon gave a talk titled “A Study on the Johnson Noise in Transient Temperatures Using the Sum of Random Sinusoidal Signals” at the 1000th American Mathematical Society Meeting, University of New Mexico, Albuquerque, New Mexico, 16-17 October 2004.

Xiaofeng Ren gave a seminar titled “The Ohta-Kawasaki Equation of Diblock Copolymers” at the School of Mathematics, University of Minnesota, Minneapolis, Minnesota, 27 October 2004.

Zhi-Qiang Wang gave six lectures (twelve hours) titled “Topics in Variational Methods and Applications” at the Summer School, Capital Normal University, Beijing, People’s Republic of China, 26 June – 18 July 2004.

Zhi-Qiang Wang gave a talk titled “Symmetry of Extremal Functions for the Caffarelli-Kohn-Nirenberg Inequalities” at the following Partial Differential Equations (PDE) Seminars at the University of Minnesota, Minneapolis, Minnesota, 1 December 2004; Peking University, Beijing, People’s Republic of China, 12 August 2004; Xiamen University, Xiamen, People’s Republic of China, 6 August 2004; Wuhan Physics and Mathematics Institute, Wuhan, People’s Republic of China, 22 June 2004; and Postech, Pohang, South Korea, 28 May 2004.

Zhi-Qiang Wang gave a talk titled “Minimax Method, Invariant Set colloquium, Central China Normal University, Wuhan, People’s Republic of China, 24 June 2004; at the Summer Workshop in Variational Methods and Applications, Capital Normal University, Beijing, People’s Republic of China, 17-18 July 2004 and at a Partial Differential Equations (PDE), and Applied Math Seminar, University of Wisconsin at Madison, Madison, Wisconsin, 20 October 2004.

Zhi-Qiang Wang gave eight lectures (twenty hours) on “Topics in Variational Methods and Applications” at Summer School, Fujian Normal University, Fuzhou, Fujian, China, 19 July – 5 August 2004.

Physics & the Center for Atmospheric & Space Sciences (CASS)

Ludger Scherliess, Robert W. Schunk, Jan J. Sojka, Donald C. Thompson, and Lie Zhu presented a paper titled “Validation of the USU GAIM Data Assimilation Model of the Ionosphere for Operational Use” at the 2004 National Radio Science Meeting, Boulder, Colorado, 5-8 January 2005.

Lie Zhu chaired the Ionospheric Dynamics and Electrodynamics session at the 2004 Fall American Geophysical Meeting, San Francisco, California, 13-17 December 2004.

The following presentations were given at the Fall American Geophysical Union (AGU) Meeting, San Francisco, California, 13-17 December 2004:

David N. Anderson, Adela Anghel, Jan J. Sojka, Robert W. Schunk, Ludger Scherliess, Donald C. Thompson, and Vince Eccles. Poster titled “Comparison Between GAIM and LLIONS in the Jicamarca Low Latitude Sector During the First CAWSES Space Weather Campaign.”

Abdallah R. Barakat. Poster titled “Effects of the Electron Component of $J_{||}$ on the Plasma Flow Along Auroral Field Lines.”

Hamed A. Bekerat, Robert W. Schunk, Ludger Scherliess, and Aaron Ridley. Poster titled “Comparison of DMSP F13 Cross-Track Ion Drift Velocities with AMIE Results.”

Michael David, Jan J. Sojka, Robert W. Schunk, and John Holt. Paper titled “Day to Day Variability of the F-Layer at Sunrise.”

Howard Demars and Robert W. Schunk. Poster titled “Seasonal and Solar-Cycle Variation of Polar Cap Patches.”

Bela G. Fejer, Jonas de Souza, Alexandro S. Santos, and Eduardo Costa Pereira. Paper titled “Equatorial F-Region Zonal Plasma Drifts Over Jicamarca During Quiet and Disturbed Conditions.”

Harish Gajulapalle, Abdallah R. Barakat, and Robert W. Schunk. Poster titled “Ion Relative Abundance and Escape Flux Composition During Storm Time: 3-D Model.”

Joshua P. Herron and Vincent B. Wickwar. Paper titled “An Earlier Lidar Observation of a Noctilucent Cloud Above Logan, Utah.”

Ludger Scherliess, Robert W. Schunk, Jan J. Sojka, Donald C. Thompson, and Lie Zhu. Poster titled “Validation of the USU GAIM Data Assimilation Model of the Ionosphere.”

Robert W. Schunk, Ludger Scherliess, Jan J. Sojka, Donald C. Thompson, and Lie Zhu. Paper titled “USU GAIM: An Operational Data Assimilation Model of the Ionosphere.”

Christopher G. Smithro and Jan J. Sojka. Poster titled “The Maunder Minimum Ionosphere.”

Jan J. Sojka, Robert W. Schunk, Ludger Scherliess, and Donald C. Thompson. Paper titled “Assimilated Low Latitude Ionosphere Variability During the First CAWSES Space Weather Campaign.”

Donald C. Thompson, Robert W. Schunk, Ludger Scherliess, Jan J. Sojka, and Lie Zhu. Poster titled "Data Availability and its Effect on the USU GAIM Data Assimilation Model."

Lie Zhu, Robert W. Schunk, Geonhwa Gee, Ludger Scherliess, Jan J. Sojka, and Donald C. Thompson. Poster titled "USU GAIM: Validation of the Ionospheric Forecasting Model (IMF) Using the TOPEX TEC Measurements."

Faculty Publications

Biology

Jordi Bosch and William P. Kemp. 2004. Effect of Pre-wintering and Wintering Temperature Regimes on Weight Loss, Survival, and Emergence Time in the Mason Bee *Osmia cornuta* (Hymenoptera: Megachilidae). *Apidologie* 35:469-479.

Edmund D. Brodie III, Kevin V. Young, and Edmund D. Brodie, Jr. 2004. Technical Comments: Response to Comment on 'How the Horned Lizard Got Its Horns? *Science* 306:230 and <http://www.sciencemag.org/cgi/content/full/306/5694/230b>.

Edmund D. Brodie III, Kevin V. Young, and Edmund D. Brodie, Jr. 2004. How Did the Horned Lizard Get Its Horns? Response. *Science* 305:1909-1910.

Brian Cardall, Edmund D. Brodie III, Edmund D. Brodie, Jr., and Charles T. Hanifin. 2004. Tetrodotoxin in the Skin Secretions of the Rough-skin Newt (*Taricha granulose*) and Regeneration After Secretion. *Toxicon* 44:933-938.

Ty J. Gardner, Daniel H. Foley III, Edmund D. Brodie, Jr., and Kevin V. Young. 2004. Barrier Fences Prevent Road Mortalities in the Flat-tailed Horned Lizard (*Phrynosoma mcallii*). *Herpetological Review* 35:250-251.

Rosalind R. James and James S. Buckner. 2004. Lipids Stimulate Spore Germination in the Entomopathogenic Ascomycete *Ascosphaera aggregata*. *Mycopathologia* 158:293-302.

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Science Scene is an internal newsletter sent to
Utah State University Administration and College of Science faculty and staff.
It is published regularly throughout the school year.
Its purpose is to inform the College of research activities of our faculty and students,
providing a forum for peers to follow one another's careers and professional development.



Editor & Layout—Colette Yates (797-3515).
A special thanks to Deans Fiesinger & Mueller and Maren Cartwright for editorial support
and to our departmental newsletter representatives —
Liz Allred, Biology; Geri Child, Chemistry and Biochemistry; Tracy Pace, Computer Science;
Lori Hirschi, Geology; Linda Skabelund, Mathematics & Statistics; Shelley Williams, Physics; and
Melanie Oldroyd, the Center for Atmospheric & Space Sciences (CASS).

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