

# FACULTY newsletter

CPMS Physical and Mathematical Sciences

## Award-winning Mathematics Professor Impacts Through Teaching, Mentoring



ABOVE: Dr. Michael Dorff

Whether it's demonstrating a principle using soap bubbles or mentoring math students from across the country, Michael Dorff is making a big impact.

Dorff, a mathematics professor in Brigham Young University's College of Physical and Mathematical Sciences, recently received the Karl G. Maeser Excellence in Teaching Award. The award recognizes superior teaching that is directed toward understanding and reasoning, meets high student expectations and has a long-lasting influence on students.

"Teaching is fun," Dorff said. "I'd rather interact with students and make it fun for them—but also demand that they learn the material. And I think you can do both."

Dorff often takes "commercial breaks" during his lectures that range from experimenting with bubbles to holding a math beauty contest with students to find the "most beautiful" equation.

"Teaching is interacting with students to get them to think, to challenge them," Dorff said. "It's not just lecturing."

In addition to his work in the classroom, Dorff has been a key player in the national growth of undergraduate

mentored math research, something Dorff calls "the best way for students to learn any material."

Beginning as he worked one-on-one with students, Dorff's efforts led him to establish and direct an annual math Research Experience for Undergraduates and the first Center for Undergraduate Research in Mathematics.

"He is able to take students at all different levels and engage them in meaningful and exciting research," said Tyler Jarvis, the chair of BYU's Math Department.

Though the math involved in the research is challenging, Dorff has found a way to help students get around it.

"We can get the essential information for them to start," he said, "and then make progress with that." He now shares this philosophy with math professors across the country as he teaches them how to mentor student research.

Dorff said his award is an honor that reflects well upon both his department and the university.

"We're getting this reputation nationally in the Math Department," he said, "which is really great for BYU."

by: Justin Ritter

## Manager for NASA Project to Deliver Honored Alumni Lecture

A deputy program manager working on NASA's spacecraft of the future will give this year's College of Physical and Mathematical Sciences (CPMS) Honored Alumni Lecture Oct. 7.

Ed Gholdston has spent the last four years working on "Orion," a Crew Exploration Vehicle that could take astronauts to the Moon and Mars. He will be lecturing on "Space: Exploring the High Frontier with Humans, Robots, and Telescopes."

Gholdston's lecture will cover some of the key events and programs in space exploration and will explore

topics including current and future manned missions, satellites and robotic probes and advances in deep-space astronomy.

Born and raised in Orlando, Florida, Gholdston spent his childhood living some 30 miles from Cape Canaveral. He earned a B.S. in physics from Florida State in 1969 and a Ph.D. in plasma and theoretical physics from BYU in 1982.

Gholdston began his career at Texas Instruments, where he worked in a microwave lab. In 1985 he joined



ABOVE: Dr. Edward W Gholdston



ABOVE : Dr. Shane Reese

## DATES TO REMEMBER

Annual Summerhays Lecture  
October 7  
C465 ESC Royden G. Derrick  
Planetarium @ 7 pm

National Chemistry Week  
October 17 - 23  
"Behind the Scenes with Chemistry"

Career Exploration Series  
October 19 - November 2  
WSC

CFS/Advancement Rank & Status  
October 25  
Binders due in college

ORCA Application Deadline  
October 29

MEG Application Deadline  
November 1

## Stats Professor Wins Award for Life's Work

This year's Joint Statistical Meeting in Vancouver held something special for BYU. Statistics professor Shane Reese won the "Statistics Award in Sports," presented at the annual conference held July 31 through August 4.

The American Statistical Association presents the award annually. The honor is based on a body of work, rather than a single paper or advancement in the science.

"It's kind of a lifetime achievement award," Reese said.

And Reese has earned it. He and colleague Gil Fellingham, also of the Department of Statistics, have worked with the US Olympic Men's volleyball team helping them earn a gold medal. He developed a comparison method to evaluate athletes past and present to determine overall skill, a sort of statistical time machine. He helped the Philadelphia Eagles develop models to better evaluate draft picks, and developed models that figure out which skills are most important for which positions in the NBA. He calculated the statistical breakdown of a triathlon to make it a fairer competition for swimmers. And the list goes on and on.

"Statistics is a discipline based on the analysis of data and statisticians are always looking for more data," Reese said. "Sports, in particular, is a discipline rich with data, providing a playground for statisticians to create

new methodologies."

Of all these accomplishments, Reese chose to highlight his statistical time machine for his hour-long speech at the conference. His advancements were meant to bridge the different eras of sports.

"Some would say comparing Babe Ruth to Barry Bonds is impossible," Reese said. "We say it is possible, using statistical methods."

Reese reworked all the data with more current athletes, as the original project was completed several years ago. He also updated the statistical methodologies, and then presented during an honorary luncheon lecture held Monday, August 2. Part of the honor was the duration of the talk, as speeches at the conference are usually 15 minutes, compared to Reese's allotted hour.

The weeklong conference gave statisticians a chance to discuss new methodologies and learn about different subject areas. It also allowed those in the same field to discuss further research opportunities.

"It's fun," Reese said. "It's hard to imagine that you can get 6000 statisticians in one place and call it fun. But it's a unique opportunity to meet and interact with prominent statisticians who you would otherwise never meet."

by: Meghan Fletcher

## Lecture (cont.)

United Technologies Corporation, where he headed a team of engineers and scientists in designing and constructing power system hardware for the International Space Station.

He is currently working to create key elements of the Orion spacecraft's electrical power system. When complete, the Crew Exploration Vehicle will replace the Space Shuttle.

Nearly 30 years after graduating from BYU, Gholdston is still involved with the university. A member of the CPMS College Volunteer Leadership Council, he chairs its Professional Development committee. He also en-

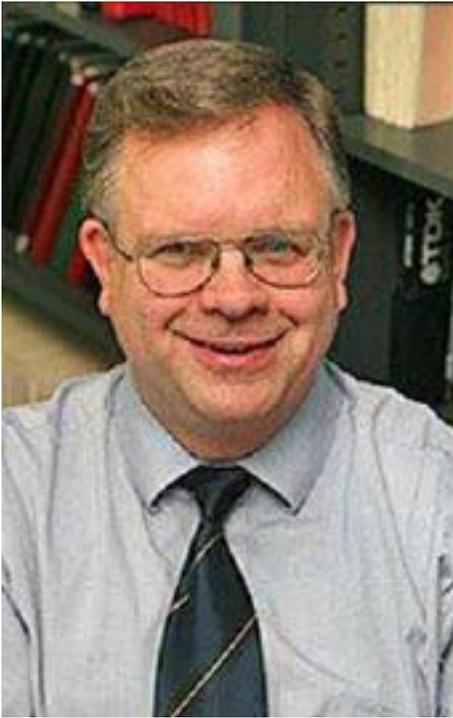
courages alumni and friends to donate to university programs.

"BYU has come to represent for me the clear proof that an outstanding academic institution can also in parallel provide an environment for spiritual growth and character," Gholdston said.

Gholdston and his wife, Merleen, have three children, two of which came to BYU for their undergraduate degrees.

The CPMS Honored Alumni Lecture will be held on Thursday, Oct. 7, at 11 a.m. in 1170 TMCB. Gholdston will be honored during the BYU Homecoming Spectacular in the Marriott Center on Friday, Oct. 8, at 7:30 p.m.

by: Justin Ritter



ABOVE : Dr. Robin Roundy

## Longtime Cornell Professor Joins CPMS Faculty

The College of Physical and Mathematical Science welcomes Robin Roundy, a professor in BYU's Mathematics Department.

Roundy arrives at BYU having taught at Cornell University for 26 years. He received his bachelor's and master's degrees at BYU in mathematics, and earned a Ph.D. in operations research at Stanford University. He researches mathematical aspects of managing inventories and production.

Originally from Provo, Roundy met his wife, Berta, through his job at the Missionary Training Center, where both of them taught Spanish. The two part-time Spanish teachers went on to raise all four of their children to be bilingual. Roundy loves spending time with his family, whether they are on the beach, playing games, or working.

After earning his doctorate degree, Roundy became a professor in Cornell's School of Operations Research and Information Engineering, a field he appreciates because of its emphasis on ap-

plication.

"It's fascinating to me to see how math applies to the business world and changes it," he said.

But working and researching in an interesting field are not the only aspects of professorship Roundy enjoys. Teaching is fun, he said, and so is watching students learn.

While teaching at Cornell, Roundy received a call to serve as president of the Colombia Barranquilla Mission. After more than 25 years, he left the Ivy League school to fulfill what would be a very rewarding call.

"Any mission, if you devote yourself to it, is a life-changing experience," Roundy said. "One's own soul changes."

Roundy served from 2007 to 2010, returning to the United States in July. Now back in his hometown and teaching at his alma mater, Roundy is glad to be here.

"We've always enjoyed Provo," he said. "BYU is an exciting place to be."

by: Justin Ritter

## Astronomy Philanthropist to Deliver BYU's Annual Summerhays Lecture

The relationship between the laws of science and the tenants of faith will be revisited at Brigham Young University's annual Summerhays Lecture on October 7th.

Presented by businessman and scientific philanthropist David Derrick, "Time and Entropy" will appeal to the everyday person as it explores the relationship entropy has with time and mortality.

Derrick is an industry leader in personal remote monitoring and is a member of BYU's College of Physical and Mathematical Sciences' College Volunteer Leadership Council and the university's President's Leadership Council.

An astronomy enthusiast, Derrick has made many contributions to astronomy and physics research through donations. The International Astronomical Union and Smithsonian Institute have named an asteroid after him to honor his efforts. Derrick holds a bachelor's degree in econom-

ics and a Master's of Business Administration from the University of Utah.

Now in its eighth year, the Summerhays Lecture continues to focus on areas where science and religion intersect and allows scholars of faith to promote religious views. The lecture is sponsored by businessman Briant Summerhays and named for his father, Hyrum, who promoted harmony between science and religion.

The 2010 Summerhays Lecture, presented by David Derrick, will take place Thursday, Oct. 7 at 7 p.m. in the BYU Royden G. Derrick Planetarium, 465 Eyring Science Center. Tickets are required, but free and can be obtained by contacting the Department of Physics & Astronomy, N-283 Eyring Science Center, 801-422-4361.

For more information, contact: J. Ward Moody, jmoody@physics.byu.edu, N484 ESC, BYU, Provo, UT 84602 Phone: 801-422-4347

by: Justin Ritter



ABOVE : Dr. David Derrick



ABOVE : Dr. Candace Berrett

## COLLEGE PUBLICATIONS

### Chemistry and Biochemistry

Adair, C.D., Buckalew, V.M., [Graves, S.W.](#), Lam, G.K., Johnson, D.D., Saade, G., Lewis, D.F., Robinson, C., Danoff, T.M., Chauhan, N., Hopocate-Sitake, M., Porter, K.B., Humphrey, R.G., Trofatter, K.F., Amon, E., Ward, S., Kennedy, L., Mason, L., Johnston, J.A., "Digoxin Immune Fab Treatment for Severe Preeclampsia". *American Journal of Perinatology*, 2010, 27(8), 655-662.

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## Recent Ohio State Graduate Joins CPMS Faculty in Statistics Department

The College of Physical and Mathematical Sciences would like to welcome Candace Berrett, a new faculty member in the Department of Statistics.

Hailing from Layton, Utah, Berrett attended BYU, where she received her bachelor's degree in actuarial science. She went on to earn a master's and a Ph.D. in statistics at Ohio State University. She gave her dissertation on Bayesian probit regression models for spatially dependent categorical data.

Berrett is the second of five children and has a sister working on a Ph.D. in math education at Penn State. Berrett herself has just finished her degree, and is looking forward to her first teaching

job—at the school she attended for her undergraduate degree.

In her spare time, Berrett enjoys running, camping, and spending time with her family and friends. She also likes to quilt, a hobby that is "kind of a math thing" because it requires connecting geometric shapes, Berrett said.

Besides being excited about returning to BYU, Berrett is glad to be back in Provo. After spending several years in Ohio, she said she is happy to be able to eat at J Dawgs and TacoTime again.

Berrett also enjoys photography, a pastime she came to love after taking a photography class in high school.

by: Justin Ritter

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### Geology

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### Mathematics

Daryl Cooper, Mark Lackenby, [Jessica Purcell](#). "The length of unknotting tunnels". *Algebraic & Geometric Topology*, 2010, 10, 637-661

[Lennard F. Bakker](#), [Tiancheng Ouyang](#), Duokui Yan, Skyler Simmons and Gareth E. Roberts. "Linear stability for some symmetric periodic simultaneous binary collision orbits in the four-body problem". *Celestial Mechanics and Dynamical astronomy*. 2010, online, DOI 10.1007/s10569-010-9298-y

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# GRANTS-Congrats to all faculty receiving new research funding!

## **Chemistry/BioChemistry:**

### **Matthew Linfood-**

Sponsor: HZO, Inc.

Title: Optimization and Advancement of Hydrophobic Coating for Mobile Electronic Devices

### **Paul B. Savage-**

Sponsor: Scripps Research Institute (NIH)

Title: Using Lipids for Vaccination

## **Computer Science:**

### **Mark Clement-**

Sponsor: NSF

Title: Collaborative: Developing genomic tools

for integrative bio research

### **Jay McCarthy-**

Sponsor: NSF

Title: Modern Web Applications with Callbacks

## **Geological Sciences:**

### **Thomas Morris-**

Sponsor: Utah Geological Survey

Title: Reservoir Characterization of Subtidal to

Supratidal Facies

### **Ron Harris-**

Sponsor: NSF

Title: Quantification of Rates and Amount of

Continental Subduction

### **Summer Rupper-**

Sponsor: NSF

Title: Collaborative Research: Annual satellite era accumulation patterns over WAIS Divide

## **Mathematics:**

### **Jessica Purcell-**

Sponsor: NSF

Title: Collaborative Research: Hyperbolic geometry of knots and 3-manifolds

## **Physics & Astronomy:**

### **Scott Bergeson-**

Sponsor: NSF

Title: Dynamics of ultracold neutral plasmas in the first 100 ns