

FACULTY newsletter

CPMS Physical and Mathematical Sciences

Predicting the President: Exit Polling



ABOVE BYU Broadcasting hosts Utah's one-and-only exit poll.

Photo courtesy of Brian Shaw

"Where's group 108?" shouted David Sturgess, a student volunteer for the Utah Colleges Exit Polls, as he and his student team tried to keep track of hundreds of students reporting survey results on election day at the exit poll headquarters on BYU campus.

Every two years, Utah college students gather from all over the state to create Utah's exit poll. An exit poll is a survey randomly distributed at voting stations on election day. The survey asks voters their views on various topics and attempts to predict the final verdict on the issues before the official results come in.

"Exit polling happens in almost every state," student volunteer Cate Stolworthy explained with a smile, "but Utah's one-and-only exit poll is this one."

continued on page 3

Killer Test + Math Skills = Mathlete

It's the most wonderful time of the year.

Forget the mistletoe and holly berries. Bring on the calculators, pencils, and scratch paper.

Mathematics students found all of these at this year's Intermountain Math Competition, an annual test that determines whether BYU, University of Utah, Boise State University, Idaho State University, or University of Nevada Reno has the best math students. In this math competition among 36 students, the top six scores were all from BYU.

"My hand is tired because you have to write really fast," said Sam Dittmer, a junior from Indianapolis, who got a perfect score of 70/70. The two students who tied for second (also from BYU) received 60/70, still a score to be reckoned with at the Intermountain Math Competition.

BYU uses the competition to prepare for the more difficult Putnam Exam that happens every year on the first Saturday of December. The Putnam brings 4,000 students from 600 universities face to face in one enormous battle of brains.

"The Intermountain Math Competition is not as hard as the Putnam, where the median score is zero, but it's a

good stepping stone to prepare for the event," said Dr. Pace Nielsen, who compiles the questions from various universities for the Intermountain Math Competition.

The scores of the Intermountain Math Competition help professors decide which three students will represent BYU at the Putnam Exam. And this year, they are very excited about the current team of "mathletes."

"We've got a really good group right now. We're all excited to see how the team does on the Putnam test this December," Dr. Gary Lawlor said. "We think they can score in the top 10 this year."

Dr. Lawlor received 30th place on the Putnam his senior year at BYU in 1983. He went on to get his PhD in mathematics at Stanford. Now he passes on his Putnam wisdom by teaching Math 391R, a class dedicated to preparing students for the challenging exam, with Dr. Tiancheng Ouyang.

"To prepare for the Putnam competition, we help them with five different subjects including algebra, calculus, number series, combinatorics, and probability," Dr. Ouyang said.

For many Putnam veterans, solving equations and winning competitions

is something they've loved since their youth.

"The biggest thing that honed my skills in mathematics was just the desire to do well in these competitions," Dr. Lawlor said. "As a byproduct of that, I did well in my classes. And because I did well on the Putnam test, that opened doors for me to go to graduate school."

Those who participate in the Putnam Exam get instant recognition by many of the top graduate programs in the nation, as well as the National Science Foundation. This can help winning students receive scholarships and be accepted to their preferred grad school.

Perhaps this December, a little Christmas magic will rub off on this year's competing Putnam "mathletes," and they'll finally crack that elusive top 10 ranking.

by: Curtis Penfold

Photo courtesy of Reb



Dates to Note

SRC Website Opens for
Abstract Submissions

Tuesday, January 15

Public Math Lecture: Sridhar
Tayur

Tuesday, January 22
4p.m., TMCB 301

College Awards Banquet

Thursday, January 31
6p.m., WSC Ballroom

University Award Nominations

Due to the College

Wednesday, February 6

Izatt-Christensen Lecture

General Session

Wednesday, February 6

4p.m., JSB Auditorium

Technical Presentation

Thursday, February 7

11a.m., BNSN W111

College Grants

Mathematics Education

[Dawn Teuscher](#)

Sponsor: ASU (NSF)

Title: Pathways to Calculus:

Disseminating and Scaling a
Professional Development Model
for Algebra

The Science of Sound



Photo courtesy of Levi Price

Most people recognize these lyrics: "What is love? Baby don't hurt me, don't hurt me, no more." For one BYU club, this '90s hit is more than just a catchy love song—it's science.

The BYU Acoustics Club recently held Sounds to Astound presentations for crowds of gasping children, students, and adults. At one point, the presenters even played the song "What is Love," while fire shot up at different intervals, showing the frequencies in the song.

Other experiments included exploding balloons, teaching wavelengths

with Slinkys, and measuring the decibels of leaf blowers and the crowd's screams. Student presenters said they want kids attending the events to understand how much fun science is.

"As a freshman in college, I see all these big huge words, and I'm sometimes lost and confused about what the professors are talking about," said Aaron Vaughn, a physics major studying acoustics. "But when you really get down to the simple basics, [science] is really fun."

Parents at the event said they came for family night—or even just to show their children the magic of science.

"My husband's a scientist," said Christy Horn, Sounds to Astound attendee who brought her two children to the event. "So we are pretty passionate about making sure [our kids] know about the world around them and have a love of learning."

Students studying acoustics are usually pretty passionate about learning, and not just about science. The study of acoustics incorporates a wide variety of topics, including physics, engineering, computer science, linguistics, and music just to name a few. However, that doesn't stop them from exploding balloons and blasting tunes.

by: Alysa Kleinman

Polls

continued from page 1

Of the 600 volunteers, more than 400 came from BYU campus, and a large portion came from the BYU Department of Statistics. Although many hours were spent in organizing the event, statistics students, like Adam Jackman, still had to work long hours that Tuesday to pull everything together.

"We started at 5:00 a.m. and have been going since. Full steam," said Jackman at 8:30 p.m. on Tuesday night. Most students didn't return to their own homes until after 11:00 p.m. that night.

Despite the long hours, Brittany Spencer, a graduate student in the statistics program, said she'd definitely do it again.

"It's really neat seeing a big project like this come together," she said, "even if it seems a little hazy along the way!"

While the event was a fun experience for everyone involved, Spencer said that it was also a great way for the statistics students to apply what they've been learning.

"Instead of just sitting there learning theory, we're actually doing it!"

Producing a top-notch exit poll survey like this isn't easy, however. Professor Dan Williams, who has been the lead statistics faculty member on the event for four years, explained, "It takes a lot of preparation. Once we finish this poll up, we start planning for the next one,

two years away."

And that preparation certainly paid off this year. The exit polling student team was seven for seven in their predictions. These seven don't include three other political races that the team termed "too close to call." Even in these instances, however, the exit poll's information held true and did indeed predict the correct final results. Professor Dan Williams was very pleased with how his statistics students worked in the event.

He said, "When it comes down to the bottom line, the students have done a major project. . . . We had some issues . . . but we did it!"

by: Brian Shaw

College Publications

Computer Science

B. Ricks, [P.K. Egbert](#), "More Realistic, Flexible, and Expressive Social Crowds Using Transactional Analysis", *The Visual Computer*, 2012, volume 28/issue 6-8, pp. 889-898

[S. Holladay](#), [P.K. Egbert](#), "Solid-state Culled Discrete Element Granular Systems", *Eurographics*, 2012, pp. 65-68

D. Adams, [P.K. Egbert](#), S. Brunner, "Feature-based Interactivity Sketched Terrain", *ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*, 2012, pp. 208

[S. Holladay](#), [P.K. Egbert](#), "Granular Material Deposition for Simulation and Texturing", *Conference on Articulated Motion*

and Deformable Objects, 2012, volume 7378, pp. 163-172

B. Ricks, [P.K. Egbert](#), "Improved Obstacle Relevancy, Distance, and Angle for Crowds Constrained to Arbitrary Manifolds in 3D Space", *Eurographics*, 2012, pp. 73-76

M.S. Pera, [Y. Ng](#), "BReK12: A Book Recommender for K-12 User", *Proceedings of the 35th International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2012, pp. 1037-1038

R. Qumsiyeh, [Y. Ng](#), "Predicting the Ratings of Multimedia Items for Making Personalized Recommendations", *Proceedings of the 35th International ACM SIGIR Conference on Research and Development in Information Retrieval*, 2012, pp. 475-484

R. Qumsiyeh, M.S. Pera, [Y. Ng](#), "Generating Exact- and Ranked Partially-Matched Answers to Questions in Advertisements", *Proceedings of the 38th International Conference on Very Large Databases*, 2012, volume 5/issue 3, pp. 217-228

M.S. Pera, [Y. Ng](#), "Personalized Recommendations on Books for K-12 Readers", *Proceedings of the ACM BooksOnline'12*, 2012, pp. 11-12

M.S. Pera, [Y. Ng](#), "Using Maximal Spanning Trees and Word Similarity to Generate Hierarchical Clusters of Non-Redundant RSS News Articles", *Journal of Intelligent Information Systems*, volume 39/issue 2, 2012, pp. 513-534

