

## Transitions

Ken Pothoven has retired after 35 years at USF.

He got his bachelor's degree from Calvin College in Michigan, and his Ph.D. in functional analysis and category theory from Western Michigan University in Kalamazoo in 1969. In 1970, he came to the USF Department of Mathematics and was immediately appointed Assistant Chair. As Assistant – later Associate – Chair, he helped lead the department as it launched its new Ph.D. program and then he served as Chair from 1984 to 1992 as the

## If Size Matters, then how Large are the Primes?

by Boris Shekhtman

Counting primes is not like counting ballots in an election: if we wanted to know what proportion (or “density”) of the integers are prime, we learn little by counting them. There are countably many primes and countably many non-primes. To find the density, one must do what the exit pollsters attempt: measure the density itself. We do this by estimating how many of the first  $n$  integers are prime, and let  $n$  go to

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## The Nagle Lecture: Andrew Odlyzko on Cybersecurity

Andrew Odlyzko gave the 13th R. Kent Nagle Lecture on *Cybersecurity, Mathematics, and the Limits of Technology* to an audience of about 170 people on February 24. Professor Odlyzko, Director of the Digital Technology Center at the University of Minnesota, told us that humans and computers think very differently.

Humans are good at coming up with cumbersome security systems that humans then finesse in order to get things done. Secretaries routinely forge and fax signatures, while lawyers write laws and contracts with deliberately ambiguous wording to preserve slack. The point is that humans are supposed to use their "common sense." Odlyzko's example is of someone who asks a neighbor to "let the plumber in to fix the leaky faucet": a sensible neighbor would be presumed to know that something was wrong if the plumber started removing furniture.

Until recently, security problems were the usual embezzlement, bad checks, hold-ups, etc. Even now, most scams rely on tricking users to reveal credit card numbers for phony security checks, or sending money to cover handling costs for Nigerian lotteries. There are some technical security problems, such as the "buffer overruns" that have facilitated most virus and worm invasions in the last three decades; yet it was humans that have known about this problem and done little about it.

Odlyzko's point is that the problem goes beyond security. For example, poorly written software may be an irritant for users, but the necessity for endless upgrades provides job security for the code writers. And so, as long as humans are involved, there will be security issues...

PME again hosted the Spring and Fall Hillsborough County Math Bowls with all 23 county high schools sending team and individual student competitors; top honors went to H.C.B. Plant High School winning top honors in the overall competition.

At the MAA Suncoast Regional Meeting in December 2004 at St. Pete College, Matt Williamson, one of four USF math undergraduate students attending, delivered the student presentation *Inversion and Geometry: An Interesting Technique Not Usually Taught in Geometry Class*. And at the 2005 Joint meetings of the MAA and the FTYCMA in February 2005 at Manatee Community College, Mr. Williamson spoke again, while three other USF math undergraduate students also attended the meeting.

Two USF undergraduate students attended the 2005 Joint Meetings of the MAA and the AMS in January 2005 in Atlanta.

At the 2005 St. Pete College Mathematics Awareness Conference, undergraduate students Keith Grizzell and Nicole Hooper won a prize for solving a math problem posed by one of the speakers at the conference.

Our PME chapter inducted eleven new members this year. The induction ceremony

was attended by several inductees' parents and relatives as well as mathematics faculty members. The keynote speaker was Dr. Gordon Fox of the biology department.

The 2005 PME Outstanding Scholar was Anand Bhat. After finishing his math major last December, he has already started graduate studies in our department. Upon being named for this award, he delivered a well-received math club talk titled "Magic Squares- Some Math and Some Magic," and he received a plaque at the PME banquet.

Darshit J. Patel won the 2005 USF Council of Honor Societies Academic Achievement Award for the second year in a row. As president of the PME chapter, he represented the chapter at the joint MAA Math / PME national meeting in August.

## Student News

Four students were awarded doctorates during the 2004-'05 academic year: Djiby Fall (under Y. You; Longtime Dynamics of Hyperbolic Evolutionary Equations in Unbounded Domains and Lattice Systems), David Edwin Kephart (under N. Jonoska; Topology, Morphism, and Randomness on the Space of Formal Languages), Ferenc Tookos (under V. Totik; Hölder Continuity of Green's Function), and Norbert Noupeyou Youmbi (under A. Mukherjea; Contributions to Harmonic Analysis and Probability Theory on Semihypergroups).

Thirteen students were awarded Master degrees: Angela Angeleska, Jodi Louise Barlow, Lisa Marie Stephenson Borzewski, David Jeffrey Bueller, Stacey Lynn Cummins, Rajesh Ganesan, George W. Kimber, Jr., Gayathri Mahalingam, Meagan Nicole McNamee, Robert David Mitchell, Ena Lynette Salter, Janet Hester Samuels, and Anupama Tippabhotla.

Twenty-five received Bachelor's degrees: Hashim Ahmed (Cum Laude), Richard Arriaga, Anand Bhat (Magna Cum Laude), Scotty Boutte, Judi Charley-Sale, Natalie Davis (Magna Cum Laude), Jennifer Ezell, Justin Feller, Joshua Felton, Brian Frasier, Fred Gore (Magna Cum Laude), Keith Grizzell, Alex Guevara (Cum Laude), Jessica Halsell, Princess Harris, Christopher Hollander, Tanya Jones, Thomas Joyce, Avni Kardani, Jason Karol, John Knisley, E'Leon Mills, Robert Rienzi, Gregory Thole (Cum Laude), and Daryl Williams.

## Primes, continued from page 1

of the reciprocals diverges.

The sum of reciprocals of primes is infinite: the primes tend to infinity slow enough to be LARGE.

So the density of primes is both zero and large. We need a tiebreaker.

In 1927, B. L. van der Waerden published his famous theorem: In any finite partition of integers, one of the sets of the partition contains arithmetic

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# The Quaternion

The Newsletter of the ~~USF~~ Department of Mathematics  
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