Transitions

Jean-François Biaasse Joins the Faculty

We welcome assistant professor Jean-François Biaasse to the department this fall. Biaasse is no stranger to the Tampa Bay area, having attended summer tennis camp in Sarasota while in high school. He is looking forward to the many outdoor activities available here; alas, we cannot offer downhill skiing, another of his passions. He is also looking forward to fruitful collaboration within the department.

Biaasse specializes in the study of number fields and lattice ideals. The subject has garnered great interest from cryptographers recently. Many cryptographic schemes currently in use, particularly those used for secure internet communications, rely on the presumed difficulty of factoring large numbers. Quantum computers may someday be powerful enough to factor numbers large enough to break current encryption. Lattice ideals offer cryptographic schemes that may be resistant to attacks by quantum computers.

In addition to the presentation “Ideal lattices and tomorrow’s challenges in cryptology” which he gave for his interview, Jean-François spoke to the department about “Using lattices for computational number theory” in May.

Biaasse did his undergraduate studies at the École Normale Supérieure and his graduate studies at the École Polytechnique, both in Paris. After completing his Ph.D., he spent six months with the Mathematics Department of the University of Sydney on the development team for the computational algebra software *Magma*. He was a PIMS postdoctoral fellow for two and a half years in Calgary. Last year he was a postdoctoral fellow at the Institute for Quantum Computing of the University of Waterloo.

Richard Stark Retires

Professor W. Richard Stark retired this year after 37 years at the University of South Florida. Originally a logician, he spent much of his career working on distributed computing, especially self-organized networks. In an “artificial tissue” model, individual cells communicate with each other, collectively generating a global computation reflecting the activity of the whole. He also started the computer theory group in the department and launched many of the computer programming courses.

Stark was led to “biological metaphors” via logic. As an undergraduate at the University
of Kentucky at Lexington, he had read Stephen Kleene’s classical *Introduction to Metamathematics* during his free time while running a computer for physics and astronomy Professor Wesley Krogdhal. He then went to Kleene’s school, the University of Wisconsin at Madison, where he received a doctorate in 1975 for his work in set theory. Two years later, he met John McCarthy, the creator of the second oldest higher level computer language, LISP, which has particularly intimate connections to logic. In 1978, he became an associate professor at USF, which assigned him a computer programming course. “You could teach experimental courses then,” and Stark started LISP as a sequence of two undergraduate courses (it is now a single graduate course) using a text he ultimately published as *LISP, Lore, and Logic: And Algebraic View of LISP Programming, Foundations, and Applications*.

But by the time he met McCarthy, Stark was already interested in distributed computing – having many computers participate in a single computation. The subject goes back to the late 1940s, when John von Neumann and Stanislaus Ulam developed *cellular automata*, in which a regular array of simple synchronized processors, each connected to a few neighbors, collectively carry out a computation. Stark became interested in irregular arrays of unsynchronized processors. He sought support for research in such models of computation, and in 1984 he went to Bell Labs.

At Bell Labs, a work group focused on U.S. Navy’s Sound Surveillance System (SOSUS), a system of hydrophones scattered across the Pacific Ocean during the 1950s to use sound to triangulate and track Soviet submarines. Stark’s variant arose from the American experience in Vietnam, when a major problem was detecting enemy movements beneath the jungle’s tree canopy. Using Agent Orange to strip the canopy proved problematic in several ways, and the Army wanted a more practical method to track movements in jungles. Stark’s solution was to scatter infrared sensors that could communicate with each other locally. The devices would develop a fault-tolerant network that could collect, distribute, and transmit intelligence.

It was a well-paying job, but “working in a classified environment was no fun” and he came back to USF in 1988. But he continued work on what is now called “amorphous processing” and ultimately developed a model of asynchronous computation. He employed abstract analysis to study the probable or almost certain behavior of a network whose individual processors act randomly.

Stark was also departmental chair for one four-year term from 1994 to 1998. During his first year, he was his own associate chair: “I learned from the secretaries, who helped educate me.” For the rest of his term, his associate chair was Marcus McWaters, who succeeded him. Stark was involved in creating the Nagle Lecture series – which memorialized R. Kent Nagle, Stark’s first friend at USF.
Stark saw major changes in USF during his tenure here, and is optimistic about the future. “I think that USF has turned into a fine university. I think [President] Castor and [President] Genshaft have done more than anybody to bring USF up to the top.” His associate chair and successor, Marcus McWaters, said Stark’s “kindness and his staying power through adversity are among his most admirable characteristics. He will be sorely missed in the years to come.”

**Kaiqi Xiong Joins the Faculty**

Kaiqi Xiong joins the department as a tenured associate professor this Fall. In addition to working in the department, Xiong will be assisting the Florida Cybersecurity Center. The center was established last year at USF to make Florida a leader in cybersecurity with the support of many businesses and the state legislature.

Xiong’s current research lies in the development of algorithms and tools for computer and network security, such as cryptography, trustworthiness, risk analysis, and secure computing resource allocation used in cloud computing, big data computing, smartphone computing, sensor networks, smart grid, and emergency response communications. We welcome the new directions in research and teaching that he brings to the department.

He received his Ph.D. degree in Computer Science from the Department of Computer Sciences and his M.S. degree in Computer Engineering from the Department of Electrical and Computer Engineering at North Carolina State University, respectively. He started his career at IBM after receiving his Ph.D. degree in Mathematics from Claremont Graduate University.
Xiong has published two books, over a hundred refereed papers in leading journals and conferences, and holds two U.S. patents. His teaching and papers have been recognized with various awards. He has co-organized several large conferences, and a series of Global Environment for Networking Innovations (GENI) events. He spent several summers as a visiting researcher at the Air Force Research Laboratory. He is a senior member of the IEEE. He has also received six National Science Foundation and NSF/BBN grants since 2010. Recently he was recently awarded a grant to develop supplemental activities for undergraduate courses in cryptography.

Alan Sola will be a visiting assistant professor. A graduate of the Royal Institute of Technology in Sweden, he works in analysis and probability.

---

Other Faculty News

Catherine Bénéteau organized a workshop on Advanced Techniques in the Implementation and Creation of Process Oriented Guided Inquiry Learning (POGIL), which was held at USF in July. POGIL is a pedagogical system for teaching learning process skills (e.g. collaboration and communication) and content (using inquiry-based learning), and the POGIL project is supported by the National Science Foundation’s Division of Undergraduate Education’s National Dissemination Program via the Professional Enhancement Program (PREP) of the Mathematical Association of America.

Catherine Bénéteau and Dmitry Khavinson were awarded a $30,000 grant from the National Science Foundation to organize and support U.S. participation in the international Complex Analysis & Dynamical Systems VII conference held in Nahariya, Israel, May 10-15, 2015.

Thomas Bieske has published the textbook “An Introduction to Writing Mathematical Proofs: Shifting Gears from Calculus to Upper-Level Mathematics Classes”. Professor Bieske will be teaching Bridge to Abstract Mathematics from this text in the Fall.
Mohamed Elhamdadi and Sam Nelson of Claremont McKenna College in California wrote a senior level text on *Quandles: An Introduction to the Algebra of Knots*, which was published by the American Mathematical Society as part of its Student Mathematical Library.

Dmitry Khavinson was honored at the USF Faculty and Awards Reception last November for his promotion to Distinguished University Professor. The Distinguished University Professor award recognizes senior faculty members who have distinguished themselves among their peers both within and outside the University. For details on his work on gravitational lensing, see the 2014 Quaternion.

Dmitry Khavinson and Razvan Teodorescu received a $25,000 USF Proposal Enhancement Grant for the coming year.

Nataša Jonoska and Nadrian Seeman of New York University were awarded a $200,000 grant from the National Science Foundation for a collaborative research project on *Programmed Cyclic Molecular Dancing on 2D Origami Lattices*.

Gangaram S. Ladde was awarded a $424,000 three-year grant from the U.S. Army Research Office in Stochastic Modeling for a project on *Network-Centric Stochastic Hybrid Dynamic Time-Event Process Modeling, Methods And Analysis*. The grant includes a post-doctoral position and Research Experience for Undergraduates (REU) component.

Seung-Yeop Lee and Dmytro Savchuk each were awarded five-year $35,000 *Collaboration Grants for Mathematicians* from the Simons Foundation. The Foundation was cofounded 21 years ago by Jim and Marilyn Simons to support basic and discovery-driven research, particularly in mathematics and the physical sciences, in the life sciences, and in autism, as well as education and outreach.

Manoug Manougian received the USF 2013-2014 Outstanding Undergraduate Teaching Award last fall, at the Faculty Honors and Awards Reception held November 17. Eight other USF faculty members also received this award last year.

In 2012, Manougian received an Excellence in Teaching Award by The National Society for...
of Leadership and Success. He received Outstanding Undergraduate Teaching Awards from USF in 1997, 2002, and 2004, as well as Outstanding Teaching Award from the Teaching Incentive Program and USF in 1995 and 1999.

The goal of the Outstanding Undergraduate Teaching Award program is to encourage excellence in teaching at the undergraduate level. The University intends to ensure that the foundation courses of the undergraduate curriculum receive the proper emphasis in preparing students for work in the major, as well as providing the proper foundation in critical thinking and problem-solving skills. The Outstanding Undergraduate Teaching Award is administered by the Office of the Provost.

Professor Manougian is active on other fronts as well, and he received $34,000 from various sources to fund a project with USF’s Alliance for Integrated Spatial Technologies to bring three dimensional visualizations of ancient monuments to the web.

One of Dan Shen’s articles was nominated for the annual Taylor & Francis Reader’s Choice Award. He is the lead author of Functional Data Analysis of Tree Data Objects, one of ten articles chosen as finalists by Taylor and Francis for their inaugural Mathematics & Statistics Readers’ Award. All papers published in 2014 in any of the 102 Taylor & Francis Mathematics and Statistics journals were eligible. The paper was based upon work that Dan did as a postdoctoral fellow at the University of North Carolina—Chapel Hill. Although his paper was not the winner, we congratulate Dan on this recognition. As lead author, Shen received a π-day t-shirt from Taylor and Francis.

Dan’s research interest include Neuroimaging Data Analysis; High-dimensional Inference and Sparse Regularization; and Sample Paths of Stable Processes. Dan joined the department last year.

Wen-Xiu Ma co-chaired the Organizing Committee for the Third International Workshop on Nonlinear and Modern Mathematical Physics at the African Institute for Mathematical Sciences in Cape Town, South Africa, last April. Professor Ma also was awarded the Best Paper Award from Science China Mathematics last May for his paper on A refined invariant subspace method and applications to evolution equations.