BAYLOR {mathematics}

WINTER 2009 NEWSLETTER

Message from the Chair

Welcome to the Baylor Department of Mathematics web site! Currently, we have an active faculty of 21 members with plans to expand to 26 tenure-track members by 2012. Despite our small, but growing, faculty, we have several areas of strength in the department including algebra, analysis, differential equations, functional analysis, mathematics education, mathematical physics, numerical analysis, representation theory, and topology.

The Department of Mathematics at Baylor University offers courses leading to the Bachelor of Science, Bachelor of Arts, Master of Science, and Ph.D. degrees in mathematics. A Bachelor of Science degree is also offered in applied mathematics. The department currently has 24 graduate students. With the administration's continued support of our programs, we seek to support 32 graduate students by 2012. Most of our graduate students are Ph.D. candidates working closely with their supervisors on state-of-the art problems in both pure and applied mathematics.

Another strength of the department - actually a hallmark of Baylor's tradition of excellence - is the individual attention that our students receive from our professors. Indeed, the mathematics faculty - the 21 tenured or tenure-track members as well as our 10 lecturers - pride themselves for having an open door, easy access policy with our students. It is our mission to provide quality mathematics instruction at all levels, to make significant contributions to the discovery and dissemination of mathematical knowledge, and to develop, within a Christian environment, ethical scholars, skilled professionals, and educated leaders who are sensitive to the needs of society. Class sizes are small; in fact, most of our classes, including pre-calculus and calculus classes, have less than 40 students. For students seeking additional help in mathematics, the department also runs a daily tutorial lab that is staffed by some of our graduate students.

Please peruse our departmental web pages and see the available programs that we offer. And please don't hesitate to contact me if you have any questions!

Lance Littlejohn
Department Chair

Features

Award winning director/animator visits mathematics department

Dano Johnson, award-winning director and animator, was a guest of the department in the Fall of 2007. Dano spoke to the audience that was attracted to the Baylor Premiere showing of his latest work “Flatland: the Movie”, based on the classic 1884 novel by Edwin Abbott.

“I had an opportunity to meet Dano after the movie was shown at MathFest in San Jose last August”, says Lance Littlejohn. “I invited him to visit our campus so our students would have the opportunity to view a terrific movie”.

This animated version of Abbott’s “Flatland: A Romance of Many Dimensions”, stars Martin Sheen, Kristen Bell, Michael York, Tony Hale, and Joe Estevez. The story revolves around two-dimensional characters, Arthur Square and his curious grand-daughter Hex. They soon discover that there is much more to their planar existence – namely discover three-dimensional Spaceland and beyond – and this discovery leads them into serious trouble with the evil rulers of their two-dimensional world.

Dano began his multi-media career at the University of Texas at Austin’s Student Television Station. This invaluable education led him to produce ‘Captain Can Takes on Garbage’, an award-winning educational video made for Austin’s recycling program. Dano also completed an internship at Sesame Workshop in NYC in 2000. After graduating from the University of Texas, he developed educational content at Ignite! Learning, creating hours of multi-media for middle schoolers. In 2004, Dano created a production company with Troy Campbell called Collection Agency Films. ❖

Department of Mathematics welcomes two new faculty members

The Department of Mathematics is pleased to welcome its two newest faculty members to the department, **Dr. Simon Guest** and **Mr. Randy Hall**. Dr. Guest joins us for a three year postdoctoral position, having completed his Ph.D. in August 2008 at the University of Southern California. His research is in finite group theory, in particular the finite simple groups and their subgroup structure. Simon was recently married, and the department is excited to have both him and his wife, Shannon, join the family.

Randy Hall joins the department as a temporary lecturer in something of a homecoming. Mr.

Hall completed his M.A. at Baylor in 1971. Since then he has owned a successful software business and taught high school in Dripping Springs, TX. Randy and his wife, Cathey, have returned to their roots in Waco, and we are excited to welcome them back. He also holds an appointment in the Department of Physics at Baylor and teaches AP Calculus at Midway High School.

Randy Hall

Simon Guest

Klaus Kirsten awarded NSF grant

Klaus Kirsten, professor of mathematics at Baylor University, recently received a grant from the National Science Foundation to study a type of quantum effect known as the Casmir effect. The Casmir effect is increasingly relevant in the study of both micro-scale and cosmological-scale physics. For example, in microelectromechanical systems it is responsible for up to 10% of the forces present. On a cosmological scale, it relates to the dark energy and to the stabilization of extra dimensions of the universe. Professor Kirsten's research seeks to develop and advance techniques to obtain insight into the origin of the sign of the Casmir energy and its dependence upon the geometry and material properties of the object. Last summer, Professor Kirsten co-organized a two-week Summer Graduate Workshop at the Mathematical Sciences Research Institute at the University of California-Berkeley. The focus of the workshop was the interplay between physics and number theory.

A Moving Experience

Robert Piziak

Sid Richardson Science Building has been the home of the Department of Mathematics since 1967. Dr. Eugene Tidmore, now retired, remembers teaching at Baylor when the department was on the third and fourth floors of Pat Neff Hall. Back then, there were 5 classrooms, seven offices, 11 full time and 3 part-time faculty members. After the move, they had 7 classrooms, an audio lab and 17 offices and seemingly more space than they knew what to do with. This didn't last long as the student body grew and the need to cover required mathematics classes grew with it. The space in Sid Richardson was shared with others, including Biology, Geology, Psychology/Neuroscience. By the time Ed Oxford took over as Chair, there was a shortage of classrooms available to him, and most faculty operated out of offices the size of a closet. In the summer of 2004, when I became Interim Chair, Biology, Geology and Neuroscience moved into the new science building and I took over as much space as I could from the vacated space as we didn't get to go to the new science building (that's another story). I also worked out a space sharing agreement of the top two floors of Sid Rich with the PsyD folks. At least we had more classrooms and a conference room and some good sized offices. However, many of us still worked out of our closet sized offices. Plans had been in the works for some time for a Student Success Center housing academic advisement, academic support programs, access and learning accommodation, career counseling and career services. Only donors were needed. Finally, a generous donation of 2.5 million dollars from an anonymous donor and another generous donation of 3 million dollars from Paul Foster, president and CEO of Western Refining Co. in El Paso, gave the project legs. In July of 2006, the Regents, following a 3-day retreat, gave the go ahead on the project. The Paul L. Foster Success Center was to occupy the now vacant basement and first floor of Sid Richardson. However, Mr. Foster wanted a dedication in fall of 07, so construction needed to begin fairly quickly; indeed it began in November of 06 while classes were still in session. This begged the issue of what to do with PsyD and Mathematics during the construction. These issues occupied the better part of my fall 06 semester. Anyway, some old plans surfaced that had a cosmetic refurbishing of the top two floors of Sid Rich for 1.8 million. The Regents approved this. That sounds like a lot of money, but construction costs being what they are, it didn't seem like we would be getting very much more than a coat of paint.

There was a flurry of meetings with PsyD, the Dean, Lois Ferguson and others about how space was to be shared between PsyD and Mathematics, and where all of us would be housed during the construction. On top of all this, the President launched his strategic planning initiative and we had to plan out our departmental growth through 2012. Anyway, I

appointed a Space Committee under Ed Oxford and a Planning Committee led by Frank Mathis and set them to work.

The first issue we faced was whether to stay in Sid Rich during construction and teach our classes elsewhere. We had a meeting and voted to move at the end of the semester. The next issue was where is there to go? A quick search of the campus made it clear to me there was only one place that could hold all of us, 30 faculty, 20 graduate students and 2 staff. That place was the unfinished space (ironically, where we would have gone) in the new science building. I made this proposal. In the mean time, the Space Committee worked out a plan for us in Baylor Science Building and a plan to share space with PsyD on our return.

There were several dark days in my time as Chair, but one of the darkest was when I found out Student Athletic Services was also moving into BSB space we had requested. I found this out by accident from some carpet layers when I visited the fourth floor one day. I sent a rather strong email, one of very few such in my time as Chair, and I received a rather defensive response. After shredding my waterways on my tracker on one beautiful Saturday afternoon, I came up with a plan that would concede the prime real estate to the athletes, and still meet our needs. I ran it by the Space Committee and they agreed that I should go for it. In a remarkable meeting, my requests were accepted. The department was housed on the fourth floor of the Baylor Science Building for eight months: in the A-Wing, 30 people, in the B 407 suite, 8 faculty, and in the C-wing, 12 faculty. We also received two private offices, a private conference room, a storage closet, a quiet room and shared a classroom with the athletes. The space was carpeted, cubicles were purchased and we brought our own furniture with us. Our main problem was a lack of privacy because of the cubicles. Some of us learned more about our colleagues than we wanted to know. But, we all survived.

Another miracle occurred in November of 06. The decision was made to give our department the entire third floor of Sid Rich plus our traditional space on the second floor. PsyD will move elsewhere. I still don't quite know how that all came about, but finally we have decent size offices for faculty and teaching graduate students plus ample classrooms, seminar rooms, etc, enough to meet our strategic planning goals. It appears events have matured beyond what I hoped for. The refurbished Sid Rich is quite nice.

The move to the Baylor Science Building itself was quite an adventure. It is nontrivial to move 50 people, their phones and computers and furniture in four days. Several of us met with Stewart of Central Moving, who is quite a character. He informed us how things would work. He mapped out his timetable, what he would and would not move and got us color coded as to where we were to end up in BSB. This is where Judy Dees showed her tremendous energy and organizational skills as she prepared moving packets itemizing where each person and thing was to go. The mover was so impressed he wanted to hire her. Anyway, we made two preliminary runs with nonessential items before the big push right after finals ended. Judy was in Sid Rich before 7 am making sure everything was labeled properly and ready to go. She then went over to BSB with volunteers to direct traffic to be sure everything went to the right place. She even bought lunch for the volunteers. Remarkably, most of us had our phone and computer working shortly after our furniture got to our new digs. ITS did a fantastic job. We also had some great volunteers helping out. It was nice to visit the BSB, but I am sure most of us are glad to be back to our home in Sid Rich and our new offices and improved surroundings. ❖

Thanks, Bob!!

Frank Mathis

Robert Piziak

When Dr. Bob Piziak agreed to serve as interim chair of mathematics, he thought it would be for a short term while the department looked for a permanent chair. But the search process extended and it was two and a half years before he was able to turn over the duties to the department's new chair, Dr. Lance Littlejohn. During this period the department and the university saw considerable change as turnover occurred at almost all administrative positions with a new dean of the College of Arts & Sciences, provost, and president of the university. So as well as having to learn quickly the typical duties of chair – dealing with budgets, personnel reviews, and unhappy students – Dr. Piziak also had to adjust to new administrative policies. Dr. Piziak successfully guided the department through this period and even increased the size of the faculty as he argued for and received approval for two new positions. But the greatest challenge by far was the relocation of the entire department to the fourth floor of the Baylor Science Building while Sid Richardson was renovated. Thanks to hours of planning and meetings, Dr. Piziak made this transition as seamless as possible for the department. The Department of Mathematics greatly appreciates Dr. Piziak's leadership during this time of transition. Dr. Piziak retired in May of 2008 but continues to be a vital member of the department. He is now involved with a major strategic proposal and endowment plan that the department is putting together for the administration, and he is chairing the organization of the Central Sectional Meeting of the American Mathematical Society to be held at Baylor University in the Fall of 2009. ❖

The Feminine Math-tyque

The First Female Mathematician, Hypatia

By Natalee Miller

During the 4th Century, Theon was a celebrated professor of mathematics at the University of Alexandria. He claimed he could raise the perfect human being. He wished to give this child all sources of knowledge, from mathematics and the sciences to languages and arts as well as create a physically strong individual.* Of course, Theon referred his boasting to a son, but as fortune would have it, he was not blessed with boys, but a daughter named Hypatia. Despite this obvious setback, Theon was determined to generate this perfect child. Whether Theon was hard-headed and would not cease from his bragging or was open-minded to the education of a woman, Hypatia was immersed into a grand schooling. Unlike most women,

Hypatia knew she could achieve anything she wanted, including the study of mathematics. She was lucky. Her situation was the key factor for her blossoming education. Hypatia gained much respect for her work in mathematics and ultimately became a teacher and worked beside her father in the same university. Hypatia was able to take advantage of the opportunity afforded her by her free-thinking father and surpass even his knowledge of mathematics.**

After exceeding her father's teachings, Hypatia continued her studies in Athens, at the time, the center of mathematics.** Due to Theon's reputation, the school allowed her to study, and she established her mathematical prevalence.** Her opportunity to study higher mathematics was a rare one, especially during the 4th century, but Hypatia took advantage of her privilege and ascertained great knowledge of the discipline. In the famous painting *The School of Athens* by Rapheal, many suspect one of the figures is Hypatia (see Raphael's *School of Athens*). Unlike many female mathematicians to come after her, Hypatia was fortunate to receive the highest level of education from the center of mathematics.

After traveling most of Europe with her father, Hypatia established her reputation as a bright, mathematical thinker. Once she returned to Egypt, the University of Alexandria offered her a teaching position.** Her original teaching style and love for the subject attracted many scholars from around the globe and her reputation in Alexandria was one of awe and respect.* She delivered lectures on the *Arithmetica* by Diophantus and other individual interests.** Her novel perspective proved her mathematical genius. She was considered "a goddess, a genius, an oracle, and a gifted orator [and she helped] mathematics survive in a very tenuous world."*

Hypatia never married or had children, but her acceptance as a mathematician was widespread. She knew if she were to marry, she would not be free to pursue her mathematical ambitions. Only through sacrifice, avoiding the domestic sphere, was she able to attain the fame and knowledge so desired.

In addition to her famed teaching, Hypatia also was an author. Many of her works were lost in the destruction of Alexandria library.** In one of her books, *Astronomical Canon of Diophantus and Conics of Apollonius*, she hints at the idea of parabolas, hyperbolas, and ellipses using conic sections.* This mastered work established the grounds for the natural phenomena of cone and plane intersections.* Amazed by the prospects of geometry, she also authored a commentary on Euclid's *Elements* with her father. Her impressions on the world of mathematics are countless and many call her the "mother of mathematics" *. Her career of teaching and writing were a clear success and a rarity in the 4th and 5th century.

Unfortunately, Hypatia came to an untimely death. As a liberal, free-thinking female, she was considered a threat by many high-positioned men. One day, on her way to the University, she was met by an angered crowd who beat and mauled her. She was dragged into a near-by church and killed.

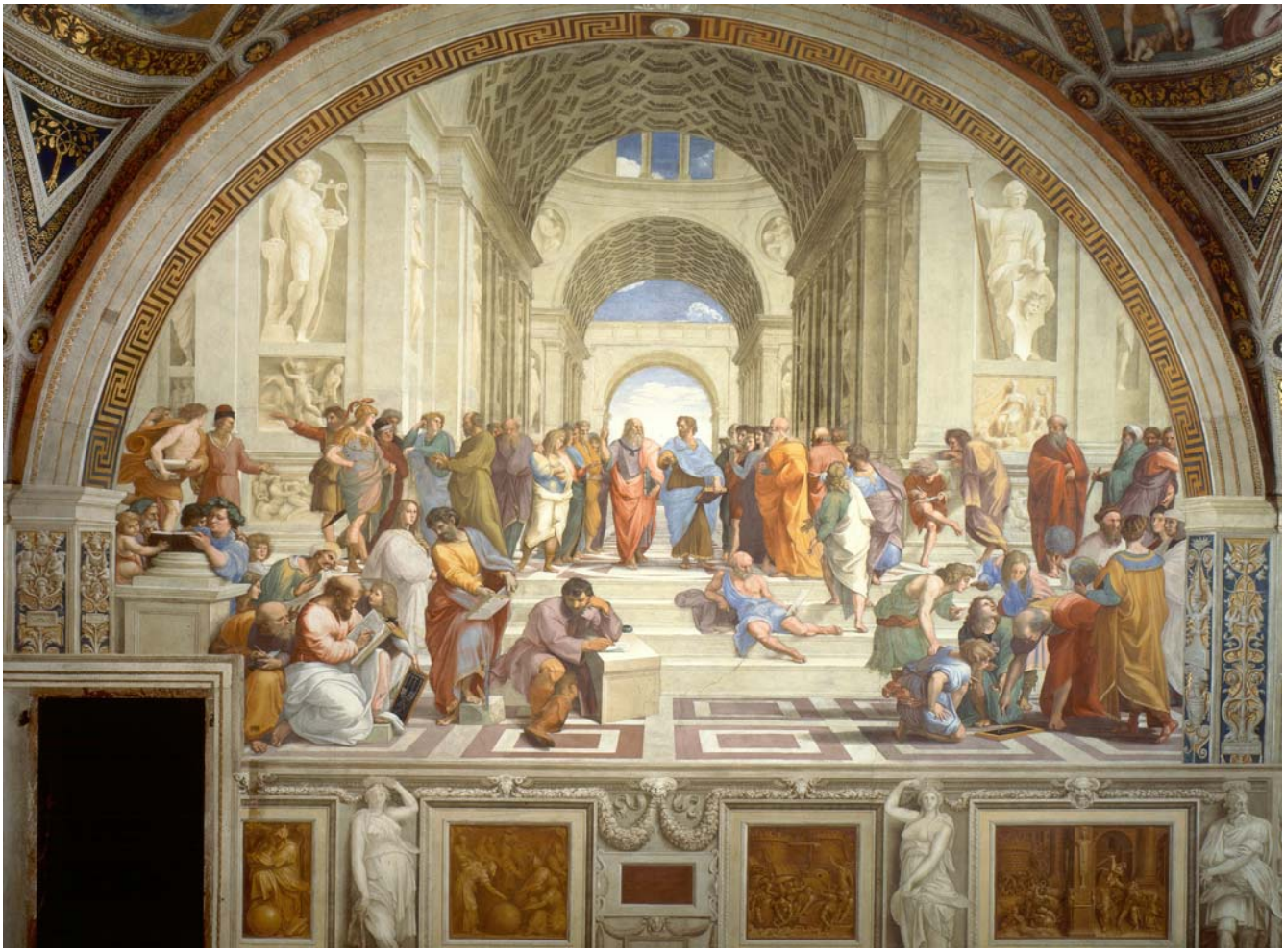
There are few women in history who mastered the art of mathematics and made significant contributions to its evolution. Hypatia is the earliest known female mathematician, and her ability to break female gender roles of 4th century Egypt is an accomplishment in its own. ❖

* Morrow, Charlene and Teri Perl. *Notable Women in Mathematics: A Biographical Dictionary*.

Westport, Connecticut: Greenwood Press, 1998.
** Osen, Lynn. *Women in Mathematics.* Cambridge, Massachusetts: The MIT Press, 1974.

Natalee Miller graduated from Baylor with a BS in Mathematics in May 2008. She is now doing graduate work in education at Simmons College in Boston, MA.

Mathematicians pose for Raphael's *School of Athens*



Raphael's famous *Scuola di Atene* covers one wall in the Apostolic Palace at the Vatican. The painting is 7.7 meters long and 5 meters high. Many scholars of the ancient world are depicted in this fresco, some of whom were mathematicians. The lady who is dressed in white, standing toward the front-left, and gazing out of the picture toward us is thought to represent Hypatia. Hypatia was a prominent fourth-fifth century Alexandrian philosopher who wrote extensively in mathematics and astronomy. Her life and works are described elsewhere in this newsletter in The Feminine Math-tyque. The fifth century church historian Socrates Scholasticus praises her in his Ecclesiastical History.

> There was a woman at Alexandria named Hypatia, daughter of the philosopher Theon, who made such attainments in literature and science, as to far surpass all the philosophers of her own time. Having succeeded to the school of Plato and Plotinus, she explained the principles of philosophy to her auditors, many of whom came from a distance to receive her instructions. On account of the self-possession and ease of manner, which she had acquired in consequence of the cultivation of her mind, she not infrequently appeared in public in presence

> of the magistrates. Neither did she feel abashed in coming to an assembly of men. For all men on account of her extraordinary dignity and virtue admired her the more.

The person toward the front-left writing in a book with a couple of people peering over his shoulders probably represents Pythagoras. The diagram on the tablet being held in front of him relates numerical ratios to musical intervals, a relationship that he is said to have discovered. Little can be said about Pythagoras with certainty, but his greatness in the minds of his followers and his impact on both mathematics and the civilization in which he lived cannot reasonably be doubted. He certainly regarded numbers as the key to understanding reality, an idea that has proved especially fruitful in modern times, but his doctrine that things themselves and even virtues themselves are ultimately numbers seems more than a bit strange to the modern mind. Pythagoras gave geometry its rigorous character. He may have been the first to use definitions in mathematical work, and he may have been the first to arrange leading propositions in a logical order. He was among the earliest to use logical deduction as a means to establish the truth of mathematical propositions, although Thales was probably the first. The Pythagorean Theorem was known to the Babylonians well before Pythagoras, but their discovery may have been an achievement based on measurement. To the Pythagoreans, who attribute its discovery to Pythagoras, it was an abstract mathematical theorem. It is said that Pythagoras sacrificed 100 oxen to the gods as a token of gratitude for its discovery.

The greatest mathematician of the ancient world, Archimedes, appears to be absent, unless he is the person toward the front-right bending over to write on a tablet. But the drawing on the tablet is a geometric figure and there appears to be a number of students present. This suggests that the person depicted is Euclid, the author of the most successful text in mathematics or science in the history of the world. Euclid's *Elements*, after 23 centuries and more than a thousand editions, is still in use, and most of our school geometry is merely a rendering of portions of it into modern mathematical language. One modern historian has said of Euclid that "He is the only man to whom there ever came or ever can come again the glory of having successfully incorporated in his own writings all the essential parts of the accumulated mathematical knowledge of his time." The Elements contains the earliest extant evidence of a systematic arrangement of postulates, definitions, and propositions. Its simple yet logical exposition accounts for its perennial success.

No depiction of the school of Athens could fail to include Socrates, Plato, and Aristotle. Plato and Aristotle are in the center walking toward us. Plato is pointing upward, and Aristotle is on his left, gesturing horizontally. The fourth person to Plato's right speaking to a small audience is thought to be Socrates. Xenophon, a student of Socrates who, apart from Plato, is the best source of information we have about Socrates, may be among those with whom Socrates is conversing. Among the others thought to be portrayed are Plotinus (back-right in isolation), Averroes (standing behind Pythagoras), Boethius (kneeling behind Pythagoras), Epicurus (behind Averroes with the book), Heraclitus (front-center at the desk), Parmenides (behind Heraclitus), Diogenes of Sinope (lying on the steps), Strabo (front-right with beard holding celestial sphere), and Ptolemy (front-right with his back toward us holding terrestrial sphere).

Raphael himself appears in the fresco. He is the person on the lower level, visible only from the neck up, standing second to the far right, gazing out of the picture toward us. He probably represents Apelles, a famous artist from ancient Greece. Other double portrayals probably include Leonardo da Vinci as Plato and Michelangelo as Heraclitus. This brings us back to Hypatia. The representation of Hypatia is thought to be a feminine portrayal of Francesco

Maria della Rovere I, the duke of Urbino and nephew of the pope, but it has also been suggested that the likeness is that of Raphael's mistress. ❖

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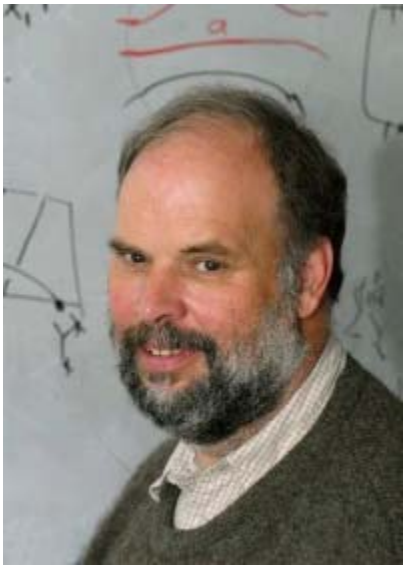
Two Lecture Series Bring in Renowned Guests, Cultivate Student Interest

The Baylor Lecture Series in Mathematics was established to bring in mathematicians who are nationally and internationally recognized for their research and contributions to mathematics. Additionally, a second lecture series, the Undergraduate Lecture Series in Mathematics, cultivates student interest in mathematics and mathematics education by bringing in renowned mathematicians with a special penchant for teaching.

Both series have been well received by student audiences. The guest lecturers included a Fields medal winner, the Director of the Mathematical Biosciences Institute at the Ohio State University, and the president of the American Mathematical Society.

Baylor Lecture Series in Mathematics



Vaughan Jones, Professor of Mathematics at the University of California, Berkeley, visited Baylor September 24 and 25 for the Second Annual Baylor Lecture Series in Mathematics. Professor Jones was awarded a Fields medal in 1990 for his contributions to the structure of von Neumann Algebras and its (unexpected) applications to knot theory. His discoveries revitalized the study of knot theory and increased interest in low-dimensional topology. He is a member of both the American Academy of Arts and Sciences and the National Academy of Sciences. During his visit to Baylor, Professor Jones gave a public lecture, entitled "Flatland: a great place to do algebra," and two colloquium talks for the Department of Mathematics on "An avalanche of Associative Algebras Coming from Planar Algebra."

Avner Friedman, Distinguished University Professor of Mathematics and Physical Sciences and the Director of the Mathematical Biosciences Institute at the Ohio State University delivered the inaugural addresses for the Annual Baylor Lecture Series in Mathematics in November of 2007. Professor Friedman gave a public lecture was entitled "What is mathematical biology and how useful is it?" and spoke to the Department of Mathematics on "Free boundary value problems arising in tumor models. He is a member of the National Academy of Sciences and of the American Academy of Arts and Sciences. He is former President of the Society of Industrial and Applied Mathematics and former Chair of the Board of Mathematical Sciences, and he has received many academic honors and awards.

George Andrews, the Evan Pugh Professor of Mathematics at the Pennsylvania State University will speak in the Third Annual Baylor Lecture Series in Mathematics in the Fall of 2009. He visited Baylor in the Fall of 2007 to give a public lecture entitled

"Teaching as an Art" and two undergraduate classroom lectures. Professor Andrews is the president-elect of the American Mathematical Society, a member of the National Academy of Sciences, and a member of the American Academy of Arts and Sciences. He is an internationally renowned researcher and teacher of mathematics. He has received a Distinguished Teaching Award from the Mathematical Association of America, is the author of several textbooks, and is a member or managing editor of a dozen mathematics journals.

Undergraduate Lecture Series in Mathematics

John Oprea, Professor of Mathematics at Cleveland State University, delivered the inaugural lectures in the new Baylor Undergraduate Lecture Series in Mathematics on November 5-6. Professor Oprea was awarded the Lester R. Ford award from the Mathematical Association of America in 1996 and the Cleveland State University Distinguished Faculty Award for Research in 2008. He is an associate editor for the Journal of Geometry and Symmetry in Physics and the author of numerous books including "Differential Geometry and its Applications" and "The Mathematics of Soap Films." Professor Oprea delivered two lectures: "Mathematics and Soap Films" and "Variational Principles and Real-World Shapes: Balloons and Droplets in Space."

Touching Base with Alumni

Will Brian (B.Sc. ’08)

I grew up in the small town of Collierville, Tennessee. As a boy I spent most of my Christmases and Thanksgivings in New Orleans and that is where my family lives now. My dad is in the process of founding a charter school in the Ninth Ward, an impoverished area of the city which has never recovered from Hurricane Katrina. My mom teaches in the school system there. My older brother lives in New Orleans serving as a lieutenant in the Louisiana National Guard and my little brother is a student at the University of Tennessee at Knoxville (the *real* UT).

I did not know that I was interested in mathematics until I was in the tenth grade. Before then I wanted to be a physicist and I read popular science books that talked romantically of black holes, hidden dimensions, and quantum weirdness. These ideas captivated my imagination, but whenever I tried to move beyond the unsatisfyingly basic texts in which I first discovered them, I encountered a barrier: I knew nothing of mathematics. Every intermediate physics text I tried to read contained baffling symbols—strange elongated S-shapes, upside-down triangles, and factors of “*d*” in the tops and bottoms of countless fractions that the authors never bothered to cancel out! When I asked my math and science teachers what it all meant, I was simply told “That’s calculus. You’ll learn it later.”

By the Christmas of 2001, I was fed up. Unwilling to wait until the twelfth grade for a course in Calculus, I drove to the bookstore and purchased Thompson's *Calculus Made Easy*. That book stole my imagination; it kept me reading for hours and hours every day until, after about two weeks, I reached the last page. For the next few years, math was my tool for better understanding physics. As I continued learning, I gradually began to realize that mathematics need not be useful to be worthwhile. I began to become interested in math for its own sake, and to discover that there is so much more to mathematics than its utility for science. It is a sort of poetry, written in a language that most people, sadly, never learn to read.

I came to Baylor to study physics and minor in mathematics. After only a semester I decided it would be better to concentrate in both equally, and just two years ago I decided to pursue mathematics wholeheartedly. The decision was not easy, and part of me still misses exploring questions about the real world. Another part of me knows that I was never really interested in such questions, only in the creative process that leads to their solutions—and that process belongs to mathematics. After graduating this spring, I hope to enter a graduate program in mathematics and, ultimately, to become a professor at a research-based institution. ❖

John Scott (B.Sc. ’07)

Well, life as a Purdue graduate student is quite busy. I often leave home before sunrise and return after sunset. My daytime and nighttime hours are crammed with grading, classes, grading, teaching, and grading. Somewhere in there I have to fit in my own work, eating, and sleeping. Right when things can’t get any busier, life seems to put up a few hurdles, but we aren’t given more than we can handle. Overall, I am having a wonderful time, and I am tremendously grateful for this opportunity.

This semester, my coursework consists of the basics – 4 hours of analysis, 4 hours of algebra, and a seminar in which professors present material for beginning graduate students. That’s been enough to keep me on my toes, and I will take the continuation of each course in the spring.

My TA duties consist of leading two recitation sections of precalculus. It has been a good experience for me, but I wouldn’t mind spending less time grading. I have 80 very capable students; I only wish some of them were a little more motivated. They have been a real treat, though, and I’m glad to have the chance to work with them.

I owe so much to my professors in the Department of Mathematics at Baylor. I have learned a great deal from them, and I am happy to report that I have been wonderfully prepared for graduate study. I thank each of my professors for their excellent instruction and support these past few years. The kindness shown by everyone in the department is truly inspiring.

I am sad that Baylor is so far away, but all that I have learned and all the great memories go with me wherever I go. ❖

Parmy Singh-Cobb (PhD. ’03)

Unbeknownst to me, my journey to Baylor began in the sixth grade in a small town in Michigan. The game was called *Krypto* and it had me hooked. Students randomly shouted out 6 natural numbers between 1 and 10, and the teacher listed them on the board. It was then the student's job to perform mathematical operations on the numbers, using each only once, until the result became the last number on the list. It was an enticing challenge for such young minds. Plus, it did not hurt that the teacher allowed us to rack up enough winning points to cash-in for cherry bubble gum pieces. Needless to say, that I found that math was fun *and* rewarding!

It was not until later in my college experience at Valdosta State University when I found the true power and reward in discovering the world of mathematics. I knew I needed to pursue this passion and help others share in my love for the subject—the life of academia was for me. My undergraduate advisor arranged for me to meet her former advisor, Dr. Johnny Henderson, at Auburn University. I found an interest in ordinary differential equations (ODE), and I loved how I was forced to reload my "toolbox" of forgotten techniques from Calculus, Trigonometry, and Algebra in order to solve each ODE.

After finishing my Master's degree at Auburn, Dr. Henderson took a position at Baylor University to help build a mathematics Ph.D. program. He welcomed his current graduate students to continue their work with him at Baylor, and I jumped at the chance. I packed up my Ford Escort and later found myself on the most beautiful campus I had ever seen. It was not only beautiful to my eyes, but it was also beautiful to my heart.

My first visit to Baylor happened to be on "Steppin' Out" day. What a wonderful sight it was to see all these college students volunteering their time fixing up homes of needy individuals. I knew then that Baylor harbored a special group of people. In fact, it is no secret that the University's students, faculty, and staff truly care about the Waco community.

I have many fond memories of activities at Baylor. The Bear Trail was great for exercise and for soaking in the beauty of the campus. However, on those hot Waco summer days, it was preferable to keep cool in the student gym. Moreover, I particularly enjoyed cooling off by participating in "Dr. Pepper Hour"—who can turn down ice cream and soda in the middle of a school day! I also enjoyed driving to Floyd Casey Stadium to cheer on the Baylor Bears, *Sick 'em Bears!,* and stopping at Katie's Custards for an after game treat.
There were even more fond memories of the time I spent in the Baylor's Mathematics Department. Every professor in the department is well known in their field and shares a genuine interest in their students. The Research Topics Seminar Series was a helpful and interesting way to see problems that the professors and the other students were solving. Furthermore, since I was studying singular differential equations on Time Scales, I thoroughly enjoyed the visit we had from Dr. Stefan Hilger, a pioneer in this field. I am sure he found it odd that I eagerly asked him to autograph my book on time-scales, but I could not pass up such a rare opportunity.

I was extremely honored to be the first Ph.D. graduate from the mathematics department at Baylor University and to represent such a fine institution. In retrospect, it was Divine intervention that led me on this path. Through my journey at Baylor and the mentoring of my advisor, Dr. Henderson, I not only gained a tremendous amount of knowledge about differential equations, but I also gained the most Awesome Knowledge—the Word of our Lord. Since graduated in 2003, I have married and settled in Panama City Beach, Florida. I have

accepted Christ as my Savior and have found a wonderful church family. I have been blessed with a rewarding career in teaching at Gulf Coast Community College, where I am the course manager for the Calculus sequence and enjoy teaching classes that range from Fundamentals of Algebra to Differential Equations to Discrete Mathematics. At the end of my second year of teaching, I was honored with the “Rookie of the Year Award.” It was quite the honor since faculty and students nominate the recipient and over 20 people were in contention. I have also been fortunate enough to adjunct for Florida State University at the Panama City campus, where I teach engineering math courses as well as upper level courses. I am so blessed to work with such caring and dedicated colleagues and students. However, I have recently decided I need to spend more time at home to take care of my daughter, Lily, who will be two years old in December. It is true that she has stolen my heart, but my love for mathematics still remains. Although, I will be taking a break from full time teaching, I hope to become involved in mathematics research as an independent consultant.

It is said that Plato once hung over the entrance to his school the words "Let No One Unversed in Geometry Enter." Have you ever thought of what sign could be hung above the entrance to Baylor’s Mathematics Department? I have a suggestion: “Let No One Unwilling to Leave as a Better Person Enter.” I definitely left Baylor with more than just a doctoral degree in hand; Baylor provided me firm foundations in both education and in spiritual living. I left *much* better than when I entered. ❖

Briefs

Pedro Morales, Ph.D. student, coaches International Mathematical Olympiad medalist

Pedro Morales, a Ph.D. student in the Department of Mathematics, spent part of his summer teaching back home in Guatemala. He also helped to prepare the International Mathematical Olympiad team from Guatemala before they departed for the IMO in Madrid, Spain this summer. Esteban Arreaga, one of Guatemala’s team members, won a bronze medal. This is Guatemala’s first medal in the IMO.

Baylor to host regional AMS conference in October 2009

The American Mathematical Society announced that Baylor University will host a regional conference in October 2009. This will be the first time that an AMS conference will be at Baylor University. The specific dates of this meeting will be October 16-18, and the site will be the Baylor Sciences Building.

Baylor Sciences Building

Department of Mathematics joins Research Group

The Mathematical Sciences Research Institute (MSRI) is dedicated to the advancement and communication of fundamental knowledge in mathematics and the mathematical sciences, to the development of human capital for the growth and use of such knowledge, and to the cultivation in the larger society of awareness and appreciation of the beauty, power and importance of mathematical ideas and ways of understanding the world. The MSRI is located in Berkeley, California and has a membership of over 90 mathematics departments in the United States and world-wide.

Mathematician and Businessman Visits Department

Professor James S. W. Wong, visited the Department of Mathematics in May, 2007. He gave a lecture to the department entitled “Rectifiable oscillations of second order linear differential equations.” Dr. Wong obtained his B.Sc. in Physics and Mathematics from Baylor University in 1960 and earned his Ph.D. in Mathematics from Cal Tech in 1965. James has held faculty positions at the University of Alberta, University of Wisconsin, Carnegie Mellon, University of Iowa, and the University of Hong Kong. He is a prolific researcher in mathematics with more than 150 publications. Besides an active life as a research mathematician, Dr. Wong is also Chairman of Chinney Investments Ltd. and Hon Kwok Land Investment Co., Ltd. The Baylor Mathematics Department looks forward to future visits from Professor Wong!