

## PROFESSIONAL PROFILE 2010

### 1. RESEARCH

#### 1.1. Papers.

- (1) (with Narutaka Ozawa) *A characterization of completely one-complemented subspaces of noncommutative  $L_1$ -spaces*, Pacific Journal of Mathematics, volume 205, no 1, (2002), 171-195.
- (2) (with Takahiro Sudo) *On the stable rank of algebras of operator fields over an  $N$ -cube*. Bulletin of the London Mathematical Society (2004), 36:3; 358-364.
- (3) (with Takahiro Sudo) *On the stable rank of algebras of operator fields over a metric space*. Journal of Functional Analysis, 220 (2005), 228-236.
- (4) (with Dan Kucerovsky) *Infinite stable rank for a continuous field algebra with fibres being  $K$* . Journal of Operator Theory, vol. 54, no. 2, (2005), 379-388.
- (5) (with Dan Kucerovsky) *Decomposition rank and absorbing extensions of type I  $C^*$ -algebras*. Journal of Functional Analysis, 221 (2005) 25-36.
- (6) *Simple real rank zero algebras with locally Hausdorff spectrum*. Proceedings of the American Mathematical Society, 134, (2006), 2223-2228.
- (7) (with Dan Kucerovsky) *An abstract Pimsner-Popa-Voiculescu Theorem*. Journal of Operator Theory, 55, (2006), 1, 169-183.
- (8) (with Dan Kucerovsky) *The corona factorization property, and approximate unitary equivalence*. Houston Journal of Mathematics. 32, (2006), no. 2, 531-550.
- (9) *The corona factorization property*. In "Operator Theory, Operator Algebras, and Applications", Contemporary Mathematics. 414, American Mathematical Society, (2006), 97-111.
- (10) *AFD multiplier algebras*. International Journal of Mathematics, vol. 17, no. 9, (2006), 1091-1102.
- (11) *Amenability of the sequence of unitary groups associated to a  $C^*$ -algebra*. Indiana U. Math. J., vol. 55, (2006), no. 4, 1389-1400
- (12) (with Dan Kucerovsky)  *$S$ -regularity and the corona factorization property*. Mathematica Scandinavica, vol. 99, (2006), no. 2, 204-216.
- (13) (with W. Winter) *A note on subhomogeneous  $C^*$ -algebras*. C. R. Math. Acad. Sci. Soc. R. Can. (i.e., Mathematical reports of the Academy of Science of the Royal Society of Canada), vol. 28, (2006), no. 3, 91-96.
- (14) (with Dan Kucerovsky) *AF-skeletons and the corona factorization property for simple real rank zero algebras*. Canadian Mathematical Bulletin, vol 50, (2007), no. 2, 227-233.
- (15) (with Bernhard Burgstaller) *Stability of a  $\sigma_P$ -unital continuous field algebra*. Journal of Functional Analysis, vol. 248, (2007), no. 2, 303-316.
- (16) (with Dan Kucerovsky) *Nonregular ideals in  $\mathcal{M}(A \otimes K)$* . Houston Journal of Mathematics, vol. 33, (2007), no. 4, 1117-1131.

- (17) (with E. Ruiz) *Extending maps in  $K$ -theory*. International Journal of Pure and Applied Mathematics, vol. 41, (2007), no. 3, 419-442.
- (18) (with Efrén Ruiz) *The automorphism group of a tracially  $AI$ -algebra*. Communications in Mathematical Physics, vol. 280, (2008), no. 2, 427-444.
- (19) *The multiplier algebra of a nuclear quasidiagonal  $C^*$ -algebra*. Bulletin of the London Mathematical Society, vol. 40, (2008), 827-837.
- (20) (with Wilhelm Winter) *Commutative subalgebras of simple stably finite real rank zero  $C^*$ -algebras*. Indiana University Mathematics Journal, 257 (2008), no. 7, 3209-3239.
- (21) (with Zhuang Niu and Efrén Ruiz) *Simple unital  $C^*$ -algebras with the stable locally finite dimensional property*. J. of Operator Theory, 61 (2009) no. 1, 147-169.
- (22) (with Dan Kucerovsky) *Amenability of the unitary group of the multiplier algebra of a stable  $AH$ -algebra*. J. of Operator Theory, 61 (2009) no. 1, 133-145.
- (23) (with Efrén Ruiz) *The structure of the unitary groups of certain simple  $C^*$ -algebras*. Houston Journal of Mathematics, 35 (2009) no. 4, 1203-1233.
- (24) (with Dan Kucerovsky) *A simple  $C^*$ -algebra with perforation and the corona factorization property*. J. of Operator Theory, 61 (2009) no. 2, 227-238.
- (25) *A Double commutant theorem for purely large  $C^*$ -subalgebras of real rank zero corona algebras*. Studia Mathematica, 190 (2009), no. 2, 135-145.
- (26) (with V. Kaftal and S. Zhang) *Strong sums of projections in von Neumann factors*. J. Funct. Anal., 257 (2009) no. 8, 2497-2529.
- (27) (with Dan Kucerovsky) *Completely positive maps into corona algebras*. Math. Proc. Cambridge Philos. Soc., 147 (2009), no. 2, 323-337.
- (28) (with Francesc Perera and Dan Kucerovsky) *Purely infinite corona algebras of simple  $C^*$ -algebras*. Mathematische Annalen 346 (2010), no. 1, 23-40.
- (29) (with W. Winter) *Nuclear dimension and the corona factorization property*. International Mathematics Research Notices, (2010) 2010: 261-278.
- (30) *Nonstability of the ideals of the corona algebra of a separable stable prime  $C^*$ -algebra*. International Journal of Mathematics 21 (2010) no. 1, 133-143.
- (31) (with Efrén Ruiz) *Simplicity of the projective unitary group of the multiplier algebra of a simple stable nuclear  $C^*$ -algebra*. Rocky Mountain Journal of Mathematics 40 (2010) no. 5.
- (32) *On the unitary group of the Jiang-Su algebra*. To appear in the Journal of Operator Theory.
- (33) (with V. Kaftal and S. Zhang) *Projection decomposition in multiplier algebras*. To appear in Mathematische Annalen.
- (34) (with Dan Kucerovsky) *Nuclearity through absorbing extensions*. To appear in C. R. Math. Acad. Sci. Soc. R. Can. (i.e., Mathematical reports of the Academy of Science of the Royal Society of Canada).
- (35) (with E. Ruiz) *On the structure of the projective unitary group of the multiplier algebra of a simple stable nuclear  $C^*$ -algebra*. Preprint.
- (36) (with V. Kaftal and S. Zhang) *Positive combinations and sums of projections in purely infinite simple  $C^*$ -algebras and their multiplier algebras*. Preprint.
- (37) (with H. Halpern, V. Kaftal and S. Zhang) *Finite sums of projections in von Neumann algebras*. Preprint.

- (38) (with E. Ruiz) *The automorphism group of a simple  $Z$ -stable  $C^*$ -algebra*. Preprint.
- (39) (with V. Kaftal and S. Zhang) *Positive combinations of projections in von Neumann algebras and purely infinite simple  $C^*$ -algebras*. Preprint.
- (40) (with Alin Ciuperca, Thierry Giordano and Zhuang Niu) *Amenability and uniqueness*. Work in progress.
- (41) (with Thierry Giordano) *Amenability of the complete isometry group of a noncommutative  $L_p$ -space*. Work in progress.
- (42) (with E. Ruiz) *On the projective general linear group of the multiplier algebra of a stable nuclear  $C^*$ -algebra*. Work in progress.

**1.2. Conferences attended, schools attended, universities visited, talks given etc.**

- (1) 1997 West Coast Operator Algebra Symposium. University of California at Santa Barbara. Attended.
- (2) 1998 West Coast Operator Algebra Symposium. California State University at San Bernardino. Attended.
- (3) 1999 Great Plains Operator Theory Symposium. Iowa State University. Gave a talk with title: *Completely contractive projections on preduals of injective von Neumann algebras*.
- (4) September 1999 - December 1999. Attended the semester long Seminar on Free Probability and Operator Spaces at Institut Henri Poincare (IHP) in Paris, France.
- (5) 2000 Canadian Operator Theory Symposium. University of Toronto. Gave a talk with title: *Completely contractive projections on  $R_*$* .
- (6) World Mathematical Year 2000 Symposium on the Legacy of John Charles Fields. University of Toronto. Attended.
- (7) September 2000. Attended the workshop on Simple  $C^*$ -algebras and Non-commutative Dynamical Systems, which was part of 2000-2001 program on Operator Algebras at the MSRI in Berkeley, California.
- (8) January 2001. Gave a talk at the Free Probability and Non-commutative Banach Spaces workshop, which was part of the 2000-2001 program on Operator Algebras at the MSRI in Berkeley California. Title of talk: *On completely one-complemented subspaces of noncommutative  $L_1$ -spaces*.
- (9) April 2001. Attended the Canadian Symposium on Operator Algebras, which was held at the MSRI during the 2000-2001 program on Operator Algebras.
- (10) 2001 Great Plains Operator Theory Symposium. University of New Hampshire. Gave a talk with the title: *Stable rank, nilpotent groups, noncommutative tori*.
- (11) November 2001. Attended the AMS Sectional Meeting at the University of California at Irvine. Attended the special session on Operator Spaces, Operator Algebras, and Applications.
- (12) May 2002. Attended the Canadian Operator Algebra Symposium, which was held in Thunder Bay, Ontario. Gave a talk with the title: *On the stable rank of algebras of operator fields over a metric space*.
- (13) December 2002. Attended the Canadian Mathematical Society Winter Meeting in Ottawa, Canada.

- (14) May 2003. Attended the Canadian Operator Algebra Symposium, which was held at the University of New Brunswick at Fredericton. Gave a talk with the title: *Simple real rank zero algebras with locally bounded irreducible representations*.
- (15) May - June 2003. Attended the Great Plains Operator Theory Symposium at the University of Illinois at Urbana-Champaign.
- (16) October 2004. Attended the Functional Analysis and Operator Algebra Symposium in the APICS 28th Annual Conference, at the University of New Brunswick, St. John's. ("APICS" abbreviates "Atlantic Provinces Council on the Sciences"). Gave a talk with the title *Amenability of the unitary group of the multiplier algebra of a stable AH-algebra*.
- (17) October 30 - November 4, 2004. Attended the workshop, "The structure of amenable systems", at the Banff International Research Station for Mathematical Innovation and Discovery (BIRS). Gave a talk with the title *When stability is a stable property*.
- (18) May 2005. Visited the Department of Mathematical Sciences at the University of New Brunswick at Saint John. Gave a talk with the title *The Banach-Tarski paradox*.
- (19) June 7- June 12, 2005. Attended the Great Plains Operator Theory Symposium at the University of Central Florida (in Orlando, Florida). Gave a talk with the title *Nuclearity through absorbing extensions*.
- (20) June 19- June 24, 2005. Attended the Canadian Operator Symposium at the University of Ottawa (in Ottawa, Ontario, Canada). Gave a talk with the title *Nuclearity through absorbing extensions*.
- (21) August 15- August 19, 2005. Attended the Northwest Dynamics Symposium at the University of Victoria, Victoria, British Columbia. This symposium is supported by the Pacific Institute for the Mathematical Sciences (PIMS).
- (22) August 2005. Visited the University of Oregon to discuss mathematics with Huaxin Lin, and regularly attended the UBC (University of British Columbia) probability seminar.
- (23) January 13, 2006. Visited the University of California at Los Angeles to discuss mathematics with Effros.
- (24) January 25, 2006. Visited the University of Victoria department of mathematics and statistics. Gave a talk with the title *(Simple real rank zero) nuclear stably finite  $C^*$ -algebras*.
- (25) March 5-10, 2006. Visited Giordano, Handelman and Pestov at the University of Ottawa to discuss mathematics. Also discussed mathematics with C. K. Fong (Carleton) Claus Koestler (Carleton) and Matthias Neufang (Carleton). Gave a talk at the Ottawa-Carleton joint analysis seminar with the title *Amenable multiplier algebras*.
- (26) March 2006. Gave a talk at the University of Toronto Operator Theory seminar with the title *Amenable multiplier algebras*.
- (27) May 29-June 2 2006. Attended the Canadian Operator Symposium (COSY 2006). Gave a talk with the title *Stability of a  $\sigma_P$ -unital continuous field algebra*.

- (28) August 2006. Attended the Texas A and M workshop on analysis and probability theory. Gave a talk with the title *Stability of a  $\sigma_P$ -unital continuous field algebra*.
- (29) November 2006. Visited University of Cincinnati to work on a research project with Professor V. Kaftal and Professor S. Zhang. Gave two talks. The first talk had the title *Amenable multiplier algebras*. The second talk had the title *The stable rank of the  $C^*$ -algebras of certain discrete nilpotent groups*.
- (30) January 2007. Attended the American Mathematical Society and Mathematical Association of America Joint Meeting in New Orleans. Worked on research project with my collaborator Efren Ruiz.
- (31) May 2007. Attended the Great Plains Operator Theory Symposium at the University of Nebraska-Lincoln. Gave a talk with the title: *A measure-theoretic uniqueness theorem and the unitary group of an injective type III factor*.
- (32) June 2007. Attended the Canadian Operator Symposium at the University of Guelph. Gave a talk with the title: *A measure-theoretic uniqueness theorem and the unitary group of an injective type III factor*.
- (33) June-August 2007. Visited the Fields Institute in Toronto, Canada. Here, I met and did research with my collaborators. I also attended the Operator Algebra Seminar and gave talks on my research during the seminar.
- (34) November 12-16 2007. I attended the workshop on Structure of  $C^*$ -algebras being held at the Fields Institute, Toronto, Ontario. This workshop is part of the 2007 Thematic Program in Operator Algebras. Here, I met and did research with collaborators.
- (35) February 22-March 1 2008. I visited the Department of Mathematics at the Universitat Autònoma de Barcelona in Barcelona, Spain. I did research with my collaborators Perera Ara, Dan Kucerovsky and Francesc Perera. I also gave a talk with the title *Nuclearity and weak uniqueness*.
- (36) May 19-May 25 2008. Attended the Canadian Operator Symposium at the University of Toronto. I did research with collaborators (among them, Alin Ciuperca and Thierry Giordano). I gave a talk with the title *Nuclearity and weak uniqueness*.
- (37) June 11-June 22 2008. I visited the University of Cincinnati and attended the Great Plains Operator Theory Symposium (which was at University of Cincinnati). I did research with collaborators Victor Kaftal and Shuang Zhang. I also gave a talk with the title *Nuclearity and weak uniqueness*.
- (38) June 26- July 26, 2008. I visited the Fields Institute in Toronto, Ontario, Canada.
- (39) July 4- July 8, 2008. I visited Thierry Giordano at the University of Ottawa, in order to work on a research project.
- (40) August 3 - August 9, 2008. I attended the Analysis and Probability Workshop at Texas A and M University. During the workshop, I worked with Wilhelm Winter on a research project.
- (41) October 6-7, 2008. I visited the Mathematics Department of the University of Houston. I gave a talk at the Departmental Analysis Seminar. The title of the talk was *The corona factorization property and related results*.

- (42) October 11-12, 2008. I attended the East Coast Operator Algebras Symposium at Penn State University, State College, Pennsylvania. I did research with my collaborators Thierry Giordano and Wilhelm Winter.
- (43) December 6-8, 2008. I attended the Canadian Mathematical Society 2008 Winter meeting at Carleton University, Ontario, Canada. I gave a talk with the title *Projection Decomposition in Operator Algebras*. I also did research with my collaborator Thierry Giordano.
- (44) June 2-6, 2009. I attended the Great Plains Operator Theory Symposium (which was held at the University of Colorado at Boulder). I did research with collaborators Zhuang Niu and Victor Kaftal. I also gave a talk with title *Projection decomposition in operator algebras*.
- (45) June 8-15, 2009. I visited the Mathematics Department at the University of Cincinnati to do research with my collaborators Victor Kaftal and Shuang Zhang.
- (46) Nov. 1-7, 2009. I attended the American Institute of Mathematics (AIM) Cuntz semigroup workshop in Palo Alto, California. Here I did research with a large number of my collaborators (e.g., Ciuperca, Lin, Niu, Perera, Winter etc.)
- (47) June 6-12, 2010. I visited the Mathematics Department of the University of Cincinnati to do research with my collaborators Victor Kaftal and Shuang Zhang.
- (48) June 12-17, 2010. I attended the Great Plains Operator Theory Symposium (which was held at the University of Denver). I did research with my collaborators Ramesh Garimella and Thierry Giordano. I also gave a talk with the title *On purely infinite corona algebras*.
- (49) June 19-28, 2010. I visited East China Normal University (in Shanghai China). I attended the 2010 Special Week on Operator Algebras Workshop. While there, I did research with my collaborator Zhuang Niu. I also gave a talk with the title *Purely infinite corona algebras*.
- (50) June 28-August 2, 2010. I visited the Fields Institute (in Toronto, Ontario, Canada). While there, I did research with my collaborator Zhuang Niu. I also discussed mathematics with George Elliott and various students and postdocs in the Operator Algebra group.
- (51) July 11-20, 2010. I visited the University of Ottawa (in Ottawa, Ontario, Canada) to attend the Workshop on Groups and Group Actions in Operator Algebra Theory. When there, I did research with collaborators Thierry Giordano and Zhuang Niu. I also gave a talk with the title *On the structure of certain topological groups associated with operator algebras*.
- (52) July 23-27, 2010. I did not go to this conference but one of my collaborators did. My coauthor Shuang Zhang (who is at the University of Cincinnati) attended the conference on "Operator Algebras and Related Topics" at the Academy of Mathematics and Systems Science, Chinese Academy of Sciences. This was a conference in honour of Richard Kadison (a distinguished professor at the University of Pennsylvania). When there, Shuang Zhang gave a talk on our joint work with Halpern and Kaftal.
- (53) September 3-11, 2010. I visited the University of Nottingham (in Nottingham, United Kingdom) to attend the London Mathematical Society

Midlands Regional Meeting and the  $C^*$ -algebra theory workshop coming after that.

- (54) October 28–31, 2010. I attended the Institute on Teaching and Mentoring, which was held at the Marriott Tampa Waterside in Tampa, Florida.

**1.3. Places visited for research, talk and/or conference in 2010.**

- (1) University of Cincinnati, Ohio, USA
- (2) University of Denver, Colorado, USA
- (3) East China Normal University, Shanghai, China
- (4) Fields Institute, Toronto, Ontario, Canada
- (5) University of Ottawa, Ottawa, Ontario, Canada
- (6) University of Nottingham, Nottingham, United Kingdom (Britain)
- (7) Marriott Tampa Waterside (for the Institute on Teaching and Mentoring), Tampa, Florida.

**1.4. Colleagues who have visited the University of Louisiana at Lafayette.**

- (1) Thierry Giordano, University of Ottawa, Ottawa, Ontario, Canada
- (2) Efren Ruiz, University of Hawaii at Hilo, Hawaii, USA
- (3) Victor Kaftal, University of Cincinnati, Ohio, USA
- (4) Richard Kadison, University of Pennsylvania, Pennsylvania, USA
- (5) Mark Tomforde, University of Houston, Texas, USA
- (6) Wilhelm Winter, University of Nottingham, Nottingham, United Kingdom

**2. TEACHING EXPERIENCE AT THE UNIVERSITY OF LOUISIANA AT LAFAYETTE**

- (1) 2006-2007 school year.
  - (a) Both semesters, I taught a differential and integral calculus course for Biology and Business majors.
  - (b) I also taught the year-long first year graduate course in Real and Functional Analysis. There were both Master's and PhD students. The topics of this course were roughly: metric spaces, measure theory, Lebesgue integral, Banach spaces, Hilbert spaces,  $L_p$ -spaces, Fourier series. The main reference for the course was my lecture notes (though students were encouraged to also consult standard texts like Folland, Royden, Rudin etc.).
  - (c) Summer 2007. I was the committee chair for the Real and Functional Analysis Comprehensive exam for graduate students.
  - (d) Summer 2007. I was the committee chair for the the Complex Analysis Comprehensive exam for graduate students.
- (2) Fall 2007.
  - (a) I taught a differential calculus course for students in engineering and the physical sciences.
  - (b) I am taught the year-long first year graduate course in Complex Analysis. This is a standard first year graduate course in Complex Analysis. The main reference for this course is my lecture notes though I encourage students to refer to standard texts like Alhfors, Rudin, Conway etc.
- (3) Spring 2008.
  - (a) I continued to teach the year-long first year graduate course in Complex Analysis.

- (b) I taught the upper division undergraduate course in ordinary differential equations. The students were mainly engineering students, and students from the mathematical and physical sciences.
- (4) Summer 2008. I was the committee chair for both the Real and Functional Analysis and Complex Analysis comprehensive exams for graduate students.
- (5) Fall 2008.
  - (a) I taught the year-long first year graduate course in Real and Functional Analysis (Math 573). This is the same as the Real and Functional Analysis course that I taught in the 2006-2007 academic year.
  - (b) I taught an advanced Functional Analysis course (Math 677). The prerequisite for this course is the Real and Functional Analysis course. The ultimate goal for the first semester (and part of the second) is the spectral theorem for bounded self-adjoint operators.
  - (c) I taught a graduate level research methods course.
- (6) Spring 2009. I continued to teach the Real and Functional Analysis course (Math 574 that semester) and the advanced Functional Analysis course (Math 678 that semester).
- (7) Summer 2009. I was the committee chairs for the Complex Analysis and Real and Functional Analysis comprehensive exams.
- (8) Fall 2009. I taught the first year undergraduate Calculus course (Math 270) and the first year graduate course in Complex Analysis (Math 575).
- (9) Spring 2010. I taught the upper level Ordinary Differential Equations course (mainly for scientists and engineers; Math 350), and taught the second semester of the graduate Complex Analysis course (Math 576).
- (10) Summer 2010. I am the committee chairs of the Complex Analysis comprehensive exam and the Real and Functional Analysis comprehensive exam.
- (11) Fall 2010. I am teaching two graduate courses. The first is the first semester in the year-long Real and Functional Analysis course (Math 573). The second is an advanced Functional Analysis course (Math 677).
- (12) Other teaching experiences:
  - (a) I am the faculty mentor for a graduate student who was awarded a Board of Regents/SREB Diversity Fellowship for doctoral study in mathematics.
  - (b) I have given out four reading courses to graduate students. One of the reading courses was in Measure Theory. The other three reading courses were advanced Functional Analysis.
  - (c) I was in the Master's Degree Committees of sixteen students. I was the Chair of five of these committees.
  - (d) I am in the PhD Oral Exam Committee of nine students.
  - (e) I was in the PhD Thesis committee of one student.
  - (f) I have written reference letters in support of at least seven students.
  - (g) I often visit the Fields Institute (Toronto) for about a month each summer and interact with the younger people (graduate students, postdocs etc.) in the Operator Algebra group.

### 3. PROFESSIONAL AND UNIVERSITY SERVICE

I am a referee for the following journals:  
Bulletin of the Canadian Mathematical Society, Bulletin of the Malaysian Mathematical Sciences Society, Canadian Journal of Mathematics, Illinois Journal of Mathematics, Journal of Operator Theory, Missouri Journal of Mathematical Sciences.

From Fall 2006 to the present, I was in the Library Committee of the Mathematics Department of the University of Louisiana at Lafayette.

I was in the conference committee for the 2010 Lloyd G. Roeling – Southern Regional Algebra Conference (which was hosted by the Mathematics Department of the University of Louisiana at Lafayette).