

PATRICIO JARA

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EDUCATION

Ph.D. in Mathematics. Louisiana State University – USA (2008).

Dissertation: Rational approximation schemes for solutions of the abstract Cauchy problem and evolution equations. Adviser: Prof. Frank Neubrander.

M.Sc. in Mathematics. Louisiana State University – USA (2004).

M.Sc. in Mathematics. University of Santiago – Chile (2001).

Thesis: Spectral invariance of integral operators in Lorentz spaces.

Licenciatura in Mathematics. University of Santiago – Chile (1999).

Thesis: On spectral theory of linear operators defined on Hilbert spaces.

RESEARCH INTERESTS

Research interest (2000 AMS Subject Classification): Numerical and Functional Analysis (65-XX and 46-XX), Partial Differential Equations (35BXX), Semigroups of Linear Operators (47DXX), Integral Transforms (44A10-44A35), Integral Equations (45D05), and Functional Calculus (44A45-47A60).

ACADEMIC EMPLOYMENT

Assistant Professor (Tenure-Track). Tennessee State University (2009-Present).

Instructor. Louisiana State University (2008).

Assigned to teach 9 credit hours per academic semester.

Teaching Assistant – Summer Instructor. Louisiana State University (2002-2008).

Assigned to teach 9 credit hours per academic year and one course during the Summers of 2004–2007, including the mentoring of first year Math and Engineering graduate students as part of the Math Tune-Up Summer program.

Instructor. University of Santiago, Chile (2001-2002).

Assigned to teach 12 credit hours per semester for math majors.

Instructor. University UCINF, Chile (2001-2002).

Assigned to teach a yearly based calculus course and a linear algebra course for computer science engineering majors (9 credit hours per semester).

PUBLICATIONS

Refereed journal articles in print or accepted for publication:

- Rational approximations schemes for solutions of the first and second order Cauchy problem. *Proc. Amer. Math. Soc.* **137** (2009), 3885–3898. DOI:10.1016/j.jmaa.2008.02.068.
- Rational approximation schemes for bi-continuous semigroups. *J. Math. Anal. Appl.* **344** (2008), 956–968. DOI: 10.1090/S0002-9939-09-09891-8.
- Rational inversion of the Laplace transform (with F. Neubrander and K. Özer). *J. Evol. Equ.*, (2012), in Press. DOI 10.1007/s00028-012-0139-1.

Refereed journal articles in review:

- Sharp numerical inversion of the Laplace transform. *Submitted.*

Other publications:

- Rational Approximation Schemes for Solutions of Abstract Cauchy Problems and Evolution Equations. Ph.D. dissertation, Louisiana State University, (2008). LSU Electronic Thesis and Dissertations 06272008-112653.

Articles in preparation:

- Approximation of semigroups generated by fractional powers of closed operators (with S. McAllister and K. Zito).
- Numerical methods for approximating the matrix exponential.
- Numerical inversion of the Stieltjes transform (with A. Cortis).

FUNDING AWARDS

- National Science Foundation – Division of Mathematical Sciences – Award DMS-1008101 – Project Title: “Numerical Inversion of the Laplace Transform and its Applications to Evolution Equations”, \$100,068, 9/15/2010–8/31/2013.

- U.S. Department of Education, Student Aid and Fiscal Responsibility Act (SAFRA), Tennessee State University – Project Title: “Increasing Success of Mathematics General Education Courses and Applied Mathematics Courses at Tennessee State University”, \$167,466 , 9/01/2010–8/31/2012.
- Travel Grant from the Louisiana Education Quality Support Fund LEQSF(2005-2007)-ENH-TR-21 for visiting the University of Parma in Italy, the Delft University of Technology in the Netherlands, the University of Karlsruhe and the University of Tuebingen in Germany.
- Travel Grant from the Louisiana Education Quality Support Fund LQSF (2004)-ENH-TR-15 for supporting the research conducted at the University of Halle, Germany.

REFEREEING

Referee for the *International Journal of Mathematics and Mathematical Sciences* of 1 paper in 2006.

TALKS SINCE 2004

- “The numerical inversion of the vector valued Laplace transform and its application to a PDE model for the growth of metastatic tumors” at the Bio-Mathematics Seminar of Vanderbilt University – April 27, 2010.
- “Laplace Transform method for approximating evolution equations” at the Department of Mathematics and Physics of Tennessee State University – February 09, 2009.
- “Rational approximation schemes for evolution equations and bi-continuous semigroups” at the Analysis Seminar of the University of Tuebingen, Germany – February 15, 2008.
- “Rational approximation schemes for evolution equations and the Hille-Phillips functional Calculus” at the Analysis Seminar of the University of Karlsruhe, Germany – February 12, 2008.
- “Rational approximation schemes for evolution equations” at the Analysis Colloquium of the Delft Technological University, The Netherlands – February 11, 2008.
- “Approximation of bi-continuous semigroups, the inverse Laplace transform and evolution equations” at the Functional Analysis and Evolution Equations Seminar of the University of Santiago, Chile – October 17, 2007.
- “Evolution semigroups in non autonomous evolution problems” at the 7th international Internet-Seminar on Operator Semigroups and applications organized by the German-Italian Consortium “International School on Evolution Equations”, Blaubeuren, Germany – June 13–20, 2004.

TEACHING

Tennessee State University. Courses taught:

College Algebra (F09x3, S10x2, S11, F11), Pre-Calculus I (F09, S10, F10x2, F11x2, S12), Basic Calculus I (S10, S12), Calculus I (F10), Calculus III (S11), Advanced Calculus I (F10), Advanced Calculus II (S11), Differential Equations (S11), Applied Mathematics (S12) .

Louisiana State University. Courses taught:

College Algebra (S03-F03), College Trigonometry by R2R delivery method (F07x3), Introduction to Contemporary Mathematics (Su05), Calculus I (F04-S05-Su06-S07-Su08-F08), Calculus II (F06-Su07-S08-F08-S09x2), Elementary Differential Equations (S09), and Linear Algebra (S09).

Louisiana Resource Center for Educators.

Taught a long-distance compressed video course of Calculus I (F04) for Slidell High School (located 100 miles away from Baton Rouge).

University of Santiago, Chile. Courses taught:

Linear Algebra (F01), Differential Equations (S02), Introduction to Abstract Algebra (S01-F01-S02), Introduction to Integration Theory (F01), Set Theory (S02), Introduction to Geometric Analysis (S01), and Advanced Calculus (S01).

University UCINF, Chile. Courses taught:

Linear Algebra (S01-F01-S02) and Calculus (S01-F01-S02).

F:= Fall – S:= Spring – Su:= Summer; also, 'x3' means 3 sections of the same course.

PROFESSIONAL MEMBERSHIPS

Member of the American Mathematical Society (AMS) and the Society of Industrial and Applied Mathematics (SIAM).