Curriculum Vitae

Erik Talvila
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Education

• Ph.D. University of Waterloo, Applied Mathematics. January, 1997. Supervisor: D. Siegel. Thesis title: *Growth estimates and Phragmén-Lindelöf principles for half space problems.*

•M.Sc. University of Western Ontario, Applied Mathematics. September, 1991. Supervisor: D. Naylor. Thesis title: *A finite Bessel transform.*

•B.Sc. University of Toronto, Mathematics and Physics. May, 1988.

Employment history

•July 2000 to present, Visiting Assistant Professor, Mathematical and Statistical Sciences, University of Alberta.

•August 1998 to July 2000, NSERC Postdoctoral Fellow, Mathematics, University of Illinois at Urbana–Champaign. Contact: P. A. Loeb.

•September 1997 to July 1998, Lecturer, Applied Mathematics, University of Western Ontario.

•January 1997 to September 1997, Assistant Professor, Applied Mathematics, University of Waterloo.

•January 1993 to December 1997, Part time lecturer: University of Waterloo (Applied Mathematics), Wilfred Laurier University (Mathematics), Wichita State University (Mathematics and Statistics).

Publications in refereed journals

1. Erik Talvila, *Henstock–Kurzweil Fourier transforms,* Illinois Journal of Mathematics, 20 pages (to appear).

2. David Siegel and Erik Talvila, *Sharp growth estimates for modified Poisson integrals in a half space,* Potential analysis **15** (2001) 333–360.

3. Erik Talvila, *Rapidly growing Fourier integrals*, American Mathematical Monthly **108** (2001) 636–641.

4. Erik Talvila, *Necessary and sufficient conditions for differentiating under the integral sign*, American Mathematical Monthly, **108** (2001) 544–548.

5. Erik Talvila, *Some divergent trigonometric integrals*, American Mathematical Monthly, **108** (2001) 432–436.

6. Peter A. Loeb and Erik Talvila, *Covering theorems and Lebesgue integration*, Scientiae Mathematicae Japonicae **53** (2001) 209–221.

7. E. Talvila, *Limits and Henstock integrals of products*, Real Analysis Exchange **25** (1999/2000) 907–918.

8. David Siegel and Erik Talvila, *Pointwise growth estimates of the Riesz potential,* Dynamics of Continuous, Discrete and Impulsive Systems **5** (1999) 185–194.

9. D. Siegel and E.O. Talvila, *Uniqueness for the n-dimensional half space Dirichlet problem,* Pacific Journal of Mathematics **175** (1996) 571–587.

Preprints

1. Erik Talvila, *Estimates of the remainder in Taylor's theorem using the Henstock/Kurzweil integral,* 7 pages (submitted).

2. Erik Talvila, *Estimates for Henstock/Kurzweil Poisson integrals,* 15 pages (submitted).

3. Parasar Mohanty and Erik Talvila, *A product convergence theorem for the Henstock–Kurzweil integral*, 5 pages (preprint).

4. Peter Loeb and Erik Talvila, *Lusin's Theorem and Bochner Integration*, 6 pages (preprint).

Conference organisation

•Canadian Mathematical Society session on Real Analysis, June 2003, Edmonton
•American Mathematical Society session on Nonabsolute Integration, September 2000, Toronto (with P. Muldowney). The proceedings, edited P. Muldowney and E. Talvila, will be published by the The Electronic Library of Mathematics.

Presentations

•University of Alberta, Approximation theory seminar.
November 6, 2002, "Conditionally convergent Fourier transforms".
•University of Waterloo, Seminar.
August 20, 2002, "Nonabsolutely convergent Fourier transforms".
•Washington and Lee University, Lexington, VA, XXVI Summer Symposium on Real Analysis.
June 26, 2002, "The Dirichlet problem with Henstock/Kurzweil boundary data".
•Université de Montréal, American Mathematical Society Meeting.
May 4, 2002. "Application of the Henstock-Kurzweil integral to the half plane Dirichlet problem".
•San Bernardino State University, 15^{th} Spring Auburn Mini-Conference on Real Analysis.
March 22, 2002. "Henstock/Kurzweil Fourier transforms".

•University of Tennessee, Chattanooga. American Mathematical Society meeting.
October 5, 2001. "Pointwise Fourier inversion without the Riemann-Lebesgue Lemma".

•Weber State University, Ogden. XXV Summer Symposium in Real Analysis.
May 26, 2001. "Half plane Dirichlet and Neumann problems".

•University of Illinois at Urbana–Champaign, Colloquium.
May 3, 2001. "A survey of nonabsolute integration".

•University of Alberta. Analysis seminar, 2001.
February 14, "Some divergent trigonometric integrals".
February 7, "Introduction to Henstock integration, Part III".
January 31, "Introduction to Henstock integration, Part II".
January 24. "Introduction to Henstock integration".

•University of Toronto. American Mathematical Society meeting.
September 24, 2000. "Nonabsolutely convergent Poisson integrals".

•Révfülöp, Hungary. Summer School on Geometric and Dynamical Aspects of Measure Theory.
September 1, 2000. "Covering theorems and Lebesgue integration".

•University of North Texas, Denton. XXIV Summer Symposium in Real Analysis.
May 25, 2000. " Some divergent integrals and the Riemann–Lebesgue lemma".

•San Diego State University, San Diego Symposium on Asymptotics and Applied Analysis.
January 10, 2000. "Two applications of finite sums of spherical harmonics".

•University of Illinois at Urbana–Champaign, Analysis Seminar.
December 9, 1999. "Some divergent integrals and the Riemann–Lebesgue lemma".

•Łódz University, Poland. XXIII Summer Symposium in Real Analysis.
June 21, 1999. "Limit theorems for products of Henstock integrable functions".

•University of Wisconsin, Madison. Conference on Singular and Oscillatory Integrals.
January 8, 1999. "Pointwise Growth Estimates for Riesz Potentials".

•University of Illinois at Urbana–Champaign, Graduate Student Seminar.
November 12, 1998. "Pointwise Growth Estimates for Riesz Potentials".

•University of Illinois at Urbana–Champaign, Analysis Seminar.
October 22, 1998. "Introduction to non-absolute integration".

•University of Toronto, Society for Industrial and Applied Mathematics Annual General Meeting.
July 14, 1998. "Growth estimates for Newtonian potentials".

•University of Western Ontario, High School Contest Problems Group.
March 24, 1998. "Infinitely large numbers".

•University of Western Ontario, Department of Mathematics Seminar.
November 25, 1997. "Phragmén-Lindelöf principles and elliptic differential equations".

•University of Western Ontario, Applied Mathematics Colloquium.

November 11, 1997. "Finite sums of spherical harmonics and the unique continuation problem for the Schrödinger equation".
•Université de Montréal, American Mathematical Society Meeting.
September 28, 1997. "Growth estimates for modified Poisson integrals".
•University of Waterloo, International Conference on Differential Equations and Dynamical Systems.
August 4, 1997. "Growth estimates for the Riesz potential" (abstract only).
•University of Waterloo, Applied Mathematics/Pure Mathematics Club.
July 9, 1997. "Integrals that depend on a parameter".
•Wilfred Laurier University, Mathematics Colloquium.
October 22, 1996. "The Poisson integral for the half space Laplace equation".
•University of Western Ontario, Applied Mathematics Colloquium.
June 11, 1996. "Modified Poisson integrals in a half space".
•University of Waterloo, Differential Equations Seminar.
January 19, 1995. "A new Phragmén-Lindelöf principle for the half space Dirichlet problem".
•Wichita State University, Mathematics Colloquium.
March 7, 1994. "A Phragmén-Lindelöf principle for elliptic partial differential equations".
April 4, 1994. "A new Phragmén-Lindelöf principle".
•University of Alberta, Mathematics Seminar.
October 15, 1993. "Uniqueness for the half space Dirichlet problem".
•Fields Institute, International Symposium on Comparison Methods and Stability Theory.
June 6, 1993. "Uniqueness for the n-dimensional half space Dirichlet problem".

Research interests
•non–absolute integration (Henstock-Kurzweil) with applications to partial differential equations and integral transforms
•maximum principles for partial differential equations

Teaching Experience
My teaching experience spans nine years and six universities. I have taught linear algebra, first and second year calculus, discrete mathematics, ordinary and partial differential equations, complex analysis and quantum mechanics. These courses have ranged from elementary level for general students to advanced level for mathematics majors. Class sizes run from 2 to 150. My teaching duties have included lecturing; running tutorials; making up and grading exams, tests, quizzes and assignments. I have taught one correspondence course and have taught students of mathematics, business, education, science and engineering. With some single section courses there has been considerable latitude in the curriculum, choice of textbook and format of the course. I have also taught multi–section courses in concert with many instructors and collaborated on the production and marking

of exams, tests and assignments. I have used Maple, Mathematica, Matlab and graphing calculators in the classroom and have had students use Maple and Matlab in tutorials. At the University of Illinois I taught a differential equations course that was entirely based on Mathematica. I have taught graduate courses at the Universities of Alberta and Illinois.

I have taught the following courses.
•University of Alberta, Fall 2003. M209 Calculus III. Course size 90.
•University of Alberta, Fall 2003. M222 Introduction to discrete mathematics. Course size 90.
•University of Alberta, Winter 2002. M114 Intermediate Calculus I. Course size 75.
•University of Alberta, Winter 2002. M600 Introduction to Henstock integration. A graduate course, 2 students.
•University of Alberta, Fall 2001, 2000. M300 Advanced boundary value problems I. Course size 90.
•University of Alberta, Winter 2002, 2001. M309 Mathematical methods for electrical engineers. Multi–section course. Class size 90.
•University of Alberta, Fall 2000. M114 Elementary Calculus I. A multi–section, general level course. Class size 90.
•University of Illinois at Urbana–Champaign, Fall 1999. M468 Partial differential equations. A graduate course, 4 students.
•University of Illinois at Urbana–Champaign, Fall 1998. M285 Differential equations and orthogonal functions. This was taught using Mathematica as part of the UIUC Calculus and Mathematica program. There were 30 students in my section.
•University of Western Ontario, Winter 1998. AM356 Advanced quantum mechanics. There were 3 students in this course.
•University of Western Ontario, Fall 1997 and Winter 1998. AM20 Calculus. I had two sections of this multi–section, general level course. Class sizes were 25 and 85.
•University of Western Ontario, Fall 1997. AM376 Complex analysis and partial differential equations for electrical engineers. Course size 50.
•University of Waterloo, Spring 1997. M136 Linear algebra for mathematics majors. Class size 150, a multi–section course.
•University of Waterloo, Winter 1997. M138 Calculus for mathematics majors. Class size 120, a multi–section course.
•Wilfred Laurier University, Fall 1996. M130 Calculus for business students. I taught two sections of this multi–section course. Each class had about 90 students.
•University of Waterloo, Spring 1996 and Fall 1996. AM351 Ordinary differential equations. This was a single section course, enrollment 25.
•University of Waterloo, Winter 1996. M220A Advanced calculus (correspondence). I corresponded with students by mail, telephone and email.

•University of Waterloo, Spring 1995. M237 Advanced calculus for mathematics majors. A single section course, enrollment 90.
•Wichita State University, Spring 1994. M111 College algebra, general level. This was a multi-section course, class size 25.

From January to September 1997, I ran a mathematics Tutorial Centre for first and second year students at the University of Waterloo. This position involved tutoring students as well as training and coordinating the 40–odd undergraduate and graduate student Teaching Assistants who worked in the Centre.

Teaching interests
•using mathematics seminar courses and written assignments to improve student reading, writing and speaking ability
•broadening the lecture format to include computer aids to teaching, such as Maple, Mathematica and Matlab
•creating a stimulating and challenging mathematics course for students in other disciplines

Funding
•2003 University of Alberta Conference Grant (with Y. Lin) $3000
•2002 University Teaching Research Fund (with G. de Vries) $9600
•2001–2004 Natural Sciences and Engineering Research Council Individual Research Grant $7 000 p.a.
•2000-2002 University of Alberta Science New Appointment Grant $25 000.

Student supervision
•2002 C. Palmer. M.Sc.
•2002 A. Levin. Research assistant
•2002 D. Steinberg. Course development assistant under UTRF award
•2001 S. Lee. NSERC Undergraduate Student Research Award

Service
•Computing Committee (University of Alberta, 2001-present)
•Reviewer for *Zentralblat MATH* (2001-present)

Professional affiliation
•Mathematical Association of America, since 1987.
•American Mathematical Society, since 1991.
•Society for Industrial and Applied Mathematics, since 1992.

Personal
I read widely and keep a writing journal. I keep myself fit running, hiking, skiing and rock climbing. I am personable and three dimensional and am working hard at becoming n-dimensional. My Erdös number is 3.