

# Ilie D. Ugarcovici

## Curriculum Vitae

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### EDUCATION

**Ph.D., Mathematics**, The Pennsylvania State University (08/2004)

*Research interests:* Dynamical Systems and Ergodic Theory, Population Dynamics

*Thesis Advisers:* Anatole Katok and Svetlana Katok

**M.S., Mathematics**, West University of Timisoara, Romania (06/1998)

**B.S., Mathematics**, West University of Timisoara, Romania (06/1997)

### PROFESSIONAL EMPLOYMENT

**Associate Professor**, Department of Mathematical Sciences, DePaul University (07/2011–present)

**Assistant Professor**, Department of Mathematical Sciences, DePaul University (07/2006–06/2011)

**G. C. Evans Instructor**, Department of Mathematics, Rice University (08/2004–06/2006)

**Graduate Assistant**, Department of Mathematics, Penn State (08/1998–07/2004)

VISITING POSITIONS: Max-Planck Institute for Mathematics, Bonn (July 2009, July 2007), ETH-Zürich (07/2002), Newton Institute for Mathematics, Cambridge (07/2000)

### HONORS AND AWARDS

**National Science Foundation Research Grant DMS-0703421** (\$88,930), 2007–2011

**College of Liberal Arts & Sciences Faculty Research and Development Grant** (\$4,200), DePaul University, 2011

**University Research Council conference support**(\$1,700), DePaul University, 2007

**College of Liberal Arts & Sciences Faculty Research and Development Grant** (\$4,200), DePaul University, 2007

**Graduate Student Outstanding Teaching Award**, Penn State, Graduate School (2004)

**ZZRQ Alumni Award** for outstanding achievements and contributions to the sense of community in the Mathematics Department, Penn State (2003)

**Teaching with Technology Certificate**, Graduate School, Penn State (2002)

**Mary McCammon Award** for Distinguished Undergraduate Teaching in Mathematics (2002)

**Graduate Student Teaching Award**, Department of Mathematics, Penn State (2002, 2000)

**Graduate Scholars Award**, Graduate School, Penn State (1998–1999)

**Tempus Scholarship**, Université Pierre et Marie Curie, Paris (Spring 1998)

PUBLICATIONS (IN REFEREED JOURNALS)

1. Chaotic dynamics of a nonlinear density dependent population model (with H. Weiss)  
Nonlinearity **17** (2004), 1689–1711.
2. Geometrically Markov geodesics on the modular surface (with S. Katok)  
Moscow Math. Journal **5** (2005), 135–151.
3. Arithmetic coding of geodesics on the modular surface via continued fractions (with S. Katok)  
CWI Tract **135** (2005), Math. Centrum, Centrum Wisk. Inform., Amsterdam, 59–77.
4. On hyperbolic measures and periodic orbits  
Discrete and Continuous Dynamical Systems **16** (2006), 505–512.
5. Symbolic dynamics for the modular surface and beyond (with S. Katok)  
Bull. Amer. Math. Soc. **47** (2007), 87–132.
6. Chaotic attractors and physical measures for some density-dependent population models  
(with H. Weiss), Nonlinearity **20** (2007), 2897–2906.
7. Theory of  $(a, b)$ -continued fraction transformations and applications (with S. Katok)  
Electronic Research Announcement in Math. Sciences, **17** (2010), 20–33.
8. Structure of attractors for  $(a, b)$ -continued fraction transformations (with S. Katok), Journal  
of Modern Dynamics **4** (2010), 637–690.
9. Applications of KAM theory to population dynamics (with M. Gidea, J. Meiss, H. Weiss)  
Journal of Biological Dynamics, **5** (2011), 44–63.
10. Applications of  $(a, b)$ -continued fraction transformations (with S. Katok)  
to appear, Ergodic Theory and Dynamical Systems

EDITOR OF SPECIAL VOLUME (with A. Şahin and M. Gidea)

“Discrete and Continuous Dynamical Systems”, vol. 2, no. 2 (2009), 221–416.

PREPRINTS AND WORK IN PROGRESS

The structure and spectrum of Heisenberg odometers (with S. Lightwood and A. Şahin),  
submitted

CONFERENCE TALKS

- Workshop in Dynamical Systems and Related Topics, Penn State (Oct '02)
- Dynamics Conference, Univ. of North Texas (May '03)
- Workshop in Dynamical Systems and Related Topics, Penn State (Oct '03)
- AMS National Meeting, Special Session on “Coding, Geometry and Dynamics” (Jan '04)
- SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah (May '05)
- AMS Sectional Meeting, Session on “Nonuniform hyperbolicity”, San Francisco (April '06)

- International Workshop on Global Dynamics, Northwestern University (May '06)
- MAA MathFest, session on "Successful Strategies in Teaching Numerical Analysis" (Aug '07)
- AMS Sectional Meeting, Session on "Geometry and Dynamics", Indiana University (April '08)
- AIMS International Conference on Dynamical Systems, Diff. Equations and Applications  
Session on "Smooth Dynamical Systems", University of Texas-Arlington (May '08)
- Workshop on Low Complexity Dynamics, Banff Research Station, Canada (May '08)
- AMS Sectional Meeting, Session on "Ergodic Theory and Topological Dynamics"  
University of Illinois, Urbana-Champaign (March '09)
- International Conference "Dynamical Numbers"  
Max-Planck Institute for Mathematics, Bonn, Germany (July '09)
- AIMS International Conference on Dynamical Systems, Diff. Equations and Applications  
Session on "Applied hyperbolic and elliptic dynamics", Dresden (May '10)

#### COLLOQUIUM AND SEMINAR TALKS

- Dynamical Systems Seminar, Penn State (Nov '01)
- Dynamical Systems Seminar, Penn State (Sept '03)
- Analysis Seminar, University of Houston (Sept '04)
- Geometry-Analysis Seminar, Rice Univ. (Sept '04)
- Geometry-Analysis Seminar, Rice Univ. (Oct '05)
- Dynamical Systems Seminar, Northwestern Univ. (Oct '06)
- Analysis Seminar, DePaul University (Oct '06)
- Ergodic Theory and Probability Seminar, Ohio State Univ. (Jan '07)
- Mathematical Sciences Seminar, Northeastern Illinois Univ. (Feb '07)
- Center for Dynamical Systems Colloquium, Georgia Tech (Feb '07)
- Dynamics Seminar, University of Chicago (April '08)
- Analysis Seminar, DePaul University (Oct '09)
- Dynamical Systems Seminar, Northwestern Univ. (Feb '10)
- Analysis Seminar, DePaul University (Sep '10)

CONFERENCES ORGANIZED:

- ◇ “Dynamics Ideas in Geometry, Topology and Number Theory” (in honor of S. Katok)  
Penn State, May 5-6, 2007 (with T. Foth and O. Sarig)
- ◇ “Applications of Measurable and Smooth Dynamical Systems to Number Theory”  
DePaul University, Oct. 4, 2007 (with M. Gidea and A. Sahin)
- ◇ AMS Special Session on “Ergodic Theory and Symbolic Dynamical Systems”  
DePaul University, Oct. 5-6, 2007 (with A. Sahin)
- ◇ AMS Special Session on “Smooth Dynamical Systems”  
DePaul University, Oct. 5-6, 2007 (with M. Gidea)
- ◇ AIMS Special Session on “Applied Hyperbolic and Elliptic Dynamics”  
Dresden, Germany, May 23-28, 2010 (with M. Gidea)

JOURNAL REFEREE: Ergodic Theory and Dynamical Systems, Nonlinearity, ERA-AMS, Dynamical Systems, Journal of Modern Dynamics, Foundations of Computational Mathematics, CRM Proceedings, Communications in Nonlinear Science.

TEACHING EXPERIENCE**Penn State** (1998–2004)

Lecturer for Linear Algebra, Multivariable Calculus, Ordinary Differential Equations; TA for MASS (Mathematics Advanced Study Semesters) Program

**Rice University** (2004–2006)

- Ordinary Differential Equations and Linear Algebra (Fall 2004, Fall 2005)
- Multivariable Calculus (Spring 2005); Complex Analysis (Spring 2005)
- Dynamical Systems (Fall 2005)
- Mathematical Biology (Spring 2006)

**DePaul University** (2006–present)

- MAT 101 College Algebra (Spring 2010)
- MAT 130 Precalculus (Fall 2007, 2008)
- MAT 131 Trigonometry (Spring 2009, Fall 2010)
- MAT 140 and MAT 141 Discrete Mathematics I, II (Fall 2006, Spring 2007)
- MAT 151 Calculus II (Spring 2007)
- MAT 304/338 Differential Equations (Spring 2009, 2010, 2011)
- MAT 320, 321 Geometry I, II (Fall 2006-2011, Winter 2007-2011)
- MAT 385/485 Numerical Analysis I (Winter 2007-2011)

- MAT 390 Mathematics Reading and Research (Spring 2011)
- MMT 440 History of Math for Middle School Teachers (Fall 2011)
- MAT 611 Calculus II for teachers (Winter 2008)
- supervised twelve independent studies (Numerical Analysis, Mathematical Modeling)
- supported and advised four research assistants (NSF funded) (Summer 2007, Winter 2009, Spring 2010)

#### SERVICE AT DEPAUL UNIVERSITY

##### **Departmental level**

- Member of the Undergraduate Curriculum Committee (2006-2007, 2008-2010)
- Member of the Search Committee for visiting positions (2008-2010)
- Coordinator of the Mathematics Colloquium Committee (2007-present)
- Member of the Course Redesign Committee (2008-present)
- Chair of the Library Committee (2008-present)
- Analysis seminar co-organizer (2008-present)
- Member of the Search Committee for tenure-track position (2010-2011)

##### **College level**

- Member of the Scholarship Committee, LA&S (2007-present)

##### **University level**

- Consultant, five-year B.S.-M.Ed. teacher-education program (2009-2010)
- Member of the LSP self-study group on Capstone courses (2010-2011)

#### PROFESSIONAL MEMBERSHIPS

- American Mathematical Society (since 1999)
- Mathematical Association of America (since 2004)