

**TULLIO CECCHERINI-SILBERSTEIN**  
**Curriculum Vitae** (updated July 27th, 2021)

**Part I General Information**

*Full Name:* Tullio Ceccherini Silberstein

*Date of Birth:* 11 November 1966

*Place of Birth:* Rome

*Citizenship:* Italian

*Codice Fiscale:* CCCTLL66S11H501W

*Permanent Address:* Via Goffredo Mameli 40, 00153 Roma

*Mobile Phone Number:* 328 105 19 37

*E-mail:* tullioecs@gmail.com

*Spoken Languages:* Italian (mother tongue), English and French (excellent), Russian (good), and German (basic).

**Part II Education**

- 1985: Diploma di Maturità Classica, Liceo Ginnasio Statale “Giulio Cesare” with mark 60 / 60.
- 1990: Laurea in Matematica, Università degli Studi di Roma “La Sapienza” with mark 110 / 110 cum Laude; title of the dissertation: “Azione di gruppi mediante automorfismi della algebra di Cuntz di ordine infinito”, advisor: Professor Sergio Doplicher.
- 1992 Post-graduate studies at IHES (Bures-sur-Yvette) and Paris VI (Paris), France.
- 1993: Master (of Arts) degree in Mathematics, University of California at Los Angeles (UCLA).
- 1994: PhD in Mathematics, UCLA; title of the dissertation: “Approximately inner and centrally free commuting squares of type  $II_1$  factors and their classification”, advisor: Professor Sorin Popa.
- 1994-1996: Post-doctorate training, Université de Genève (Switzerland).

**Part III Appointments**

IIIA Academic Appointments

- 1991-92: Visiting graduate student at the IHES (Institut des Hautes Études Scientifiques), Bures-sur-Yvette, (France).
- 1992-93: Teaching Assistant (TA) and Research Assistant (RA) at the University of California at Los Angeles (UCLA).
- 1994-96: Post-doc at the Université de Genève, Geneva (Switzerland).

- 1995-98: Ricercatore di Analisi Matematica at the Università degli Studi dell' Aquila, L' Aquila.
- Oct. 1997- Sept. 1998: Collaborateur Scientifique: Institut de Mathématiques, Université de Neuchâtel, Neuchâtel (Switzerland).
- **Nov. 1998–: Professore Associato di Analisi Matematica: Dipartimento di Ingegneria, Università degli Studi del Sannio di Benevento.**
- Nov.–Dec. 2000: Visiting Associate Professor at the Technische Universität Graz (Austria).
- January 2003: Visiting Associate Professor at the University of California San Diego (UCSD).
- November 2003 - October 2004: Leave of absence at the University of Rome “La Sapienza”.
- February 2004: Visiting Associate Professor at UCSD.
- August 2004 - January 2005: Visiting Associate Professor at the Texas A & M University, College Station.
- Fall 2006: Visiting Associate Professor at UCSD.
- January 2007: Visiting at the Technische Universität Graz (Austria).
- August 2010: Visiting Associate Professor at UCSD.
- July 2011: Visiting Associate Professor at the University of California at Los Angeles (UCLA).
- August 2011: Visiting Associate Professor at UCSD.
- July 2012: Visiting Associate Professor at UCSD.
- July-August 2014: Visiting Associate Professor at UCSD.
- July 2015: Visiting Associate Professor at UCSD.
- July 2018: Visiting Associate Professor at UCSD.
- July 2019: Visiting Associate Professor at UCSD.

### IIIB Other Appointments

- Nov. 1996- Jan. 1997: Visiting at the Steklov Mathematical Institute, Moscow (Russia).
- February 2003: Visitor at DIMACS, Rutgers University, (USA).
- October-November 2007: Visitor at IHES, Bures-sur-Yvette (France).
- October-November 2008: Visitor at IHES, Bures-sur-Yvette (France).
- December 2009: Visitor at Tata Institute of Fundamental Research (TIFR), Mumbai (India).
- February 2010: Visitor at the Kyushu University, Fukuoka (Japan).
- April 2011: Vistor at the St.Petersburg State University, St.Petersburg (Russia).
- June 2013: Visitor at ICTP Trieste.
- November 2016: Visitor at the Shanghai Jao Tong University, Shanghai (China).
- March 2017: Visitor at IMPA, Rio de Janeiro (Brazil).
- September 2017: Visitor at the Chinese Academy of Sciences, Beijing (China).

- September 2017: Visitor at Shanghai Jiao Tong University, Shanghai (China).

## Part IV Teaching experience

### Part IVA Teaching experience (graduate):

- November-December **2000**, TU Graz (Austria). Graduate course: *Groups, graphs and Amenability*.
- September **2003** - February **2004**, Università di Roma “La Sapienza”. Graduate course: *Aspetti combinatori, analitici e dinamici in teoria dei gruppi e dei linguaggi formali*.
- January **2005**, TU Graz (Austria). Graduate course: *Groups, graphs and Expanders: the Zig-Zag product*.
- November **2006**, Rice University, Houston, (USA). Minicourse: *Growth of finitely generated groups and Gromov’s theorem for groups of polynomial growth*.
- January **2007**, TU Graz (Austria), Graduate course: *Gelfand pairs and applications to Probability*.
- December **2009**, Tata Institute for Fundamental Research (TIFR) Mumbai (India). Minicourse: *Automata and Groups*.
- February **2010**, Kyushu University, Fukuoka, (Japan). Minicourse: *On the Okounkov-Vershik approach to the Representation Theory of the Symmetric Groups*.
- April **2011**, Chebyshev Laboratory at St. Petersburg State University (Russia). Minicourse: *Symbolic Dynamics and One-dimensional Cellular Automata*.
- June **2013**, ICTP-SISSA-Moscow School on Geometry and Dynamics, ICTP Trieste. Minicourse: *The Garden of Eden theorem for cellular automata over amenable groups*.
- December **2014**, Symbolic Dynamics on Finitely Generated Groups, Universidad de Chile, Santiago (Chile). Minicourse: *Cellular automata and groups*.
- January **2016**, TU Graz (Austria). Graduate course: *Automata and groups*.
- March **2017**, III Workshop on Dynamics, Numeration and Tilings (III FloripaDyn-Sys), Universidade Federal de Santa Catarina, Florianopolis (Brazil). Minicourse: *The Garden of Eden Theorem (old and new)*.
- September **2017**, Shanghai Jiao Tong University, Shanghai (China). Minicourse: *Amenability, growth, and dynamical systems*.
- March **2019**, Thematic Research Program: Operator Algebras, Groups and Applications to Quantum Information, Universidad Carlos III de Madrid, (Spain). Minicourse: *Amenability of groups*.
- August **2019**, The International Conference and PhD-Master Summer School on Groups and Graphs, Designs and Dynamics. Yichang (China). Minicourse: *Topics in representation theory*.

## Part IVB Teaching experience (undergraduate) abroad:

- **1992-1993:** (Fall Quarter) Teaching assistant for MATH 31A (Calculus), University of California at Los Angeles.
- **1992-1993:** (Winter Quarter) Teaching assistant for MATH 31B (Calculus), University of California at Los Angeles.
- **1995-1996:** (first Semester) Cours de II cycle: “La Transformée de Laplace”: Université de Genève, Geneva (Switzerland)
- **2004-2005:** (first Semester) Course MATH 151 (Calculus for Engineers). Texas A & M University, College Station.
- **2006-2007:** (Fall Quarter) Course MATH 20B (Calculus). University of California San Diego.
- **2006-2007:** (Fall Quarter) Course MATH 20F (Linear Algebra). University of California San Diego.
- **2010:** (Summer Quarter) Course MATH 20B (Calculus). University of California San Diego.
- **2010:** (Summer Quarter) Course MATH 20F (Linear Algebra). University of California San Diego.
- **2011:** (Summer Quarter) Corso MATH 131A (Real Analysis). University of California at Los Angeles.
- **2011:** (Summer Quarter) Course MATH 31A (Calculus). University of California at Los Angeles.
- **2011:** (Summer Quarter) Course MATH 20B (Calculus). University of California at San Diego;
- **2011:** (Summer Quarter) Course MATH 10B (Precalculus). University of California at San Diego.
- **2012:** (Summer Quarter) Course MATH 2 (Finite Mathematics). University of California at Los Angeles.
- **2012:** (Summer Quarter) Course MATH 31A (Calculus). University of California at Los Angeles.
- **2015:** (Summer Quarter) Course MATH 10A (Precalculus). University of California at San Diego.
- **2015:** (Summer Quarter) Course MATH 20A (Calculus). University of California at San Diego.
- **2018:** (Summer Quarter) Course MATH 10A (Precalculus). University of California at San Diego.
- **2018:** (Summer Quarter) Course MATH 20A (Calculus). University of California at San Diego.
- **2019:** (Summer Quarter) Course MATH 20A (Calculus). University of California at San Diego.
- **2019:** (Summer Quarter) Course MATH 20B (Calculus). University of California at San Diego.

- **2020:** (Summer Quarter) Course MATH 10A (Precalculus). University of California at San Diego.
- **2020:** (Summer Quarter) Course MATH 20B (Calculus). University of California at San Diego.
- **2020:** (Summer Quarter) Course MATH 10B (Precalculus). University of California at San Diego.
- **2020:** (Summer Quarter) Course MATH 20C (Calculus). University of California at San Diego.

Part IVC Teaching experience (undergraduate) in Italy:

- **1995-1996** (secondo semestre) Esercitazioni di Analisi Matematica I (CL in Informatica), Università dell' Aquila.
- (secondo semestre): Esercitazioni di Analisi Matematica II (CL in Matematica), Università dell' Aquila.
- **1996-1997** Esercitazioni di Analisi Matematica I (CL in Informatica), Università dell' Aquila.
- Esercitazioni di Istituzioni di Analisi Superiore (CL in Matematica), Università dell' Aquila.
- **1997-1998:** (secondo semestre) Esercitazioni di Analisi Matematica I (CL in Informatica), Università dell' Aquila;
- (secondo semestre) Esercitazioni di Istituzioni di Analisi Superiore (CL in Matematica), Università dell' Aquila.
- **1998-1999:** Corso di Analisi Matematica II (CL in Ingegneria informatica); Università del Sannio;
- (I semestre) Corso di Analisi Matematica I (CL in Ingegneria delle infrastrutture); Università del Sannio.
- **1999-2000:** (I quadrimestre) Corso di Analisi Matematica I (CL in Ingegneria delle infrastrutture e CL in Ingegneria delle Telecomunicazioni); Università del Sannio;
- (I quadrimestre) Corso di Analisi Matematica I (CL in Ingegneria Informatica); Università del Sannio;
- (II quadrimestre) Corso di Analisi Matematica II (CL in Ingegneria delle infrastrutture e CL in Ingegneria delle Telecomunicazioni); Università del Sannio;
- (II quadrimestre) Corso di Analisi Matematica II (CL in Ingegneria Informatica); Università del Sannio;
- (II quadrimestre) Corso di Analisi Matematica II (CL in Ingegneria informatica); Università del Sannio;
- (II quadrimestre) Corso di Analisi Matematica II (CL in Ingegneria delle infrastrutture, CL in Ingegneria delle Telecomunicazioni e CL in Ingegneria Energetica); Università del Sannio.
- **2001-2002:** Precorso (18 ore) di Matematica (CL in Ingegneria civile, CL in Ingegneria delle Telecomunicazioni e CL in Ingegneria Energetica);

- Precorso (18 ore) di Matematica (CL in Ingegneria Informatica); Università del Sannio.
- (II semestre) Corso di Matematica II (CL in Ingegneria informatica); Università del Sannio;
- (II semestre) Corso di Matematica II (CL in Ingegneria delle infrastrutture, CL in Ingegneria delle Telecomunicazioni e CL in Ingegneria Energetica); Università del Sannio;
- **2002-2003:** (I semestre) Corso di Matematica I (CL in Ingegneria informatica); Università del Sannio;
- (I semestre) Corso di Matematica I (CL in Ingegneria delle Telecomunicazioni); Università del Sannio.
- (II semestre) Corso di Matematica II (CL in Ingegneria delle infrastrutture, CL in Ingegneria delle Telecomunicazioni e CL in Ingegneria Energetica); Università del Sannio.
- **2004-2005:** (II semestre) Corso di Matematica II (CL in Ingegneria informatica); Università del Sannio;
- (II semestre) Corso di Matematica II (CL in Ingegneria delle Telecomunicazioni); Università del Sannio.
- **2005-2006:** (II semestre) Corso di Matematica II (CL in Ingegneria informatica); Università del Sannio;
- (II semestre) Corso di Matematica II (CL in Ingegneria delle Telecomunicazioni); Università del Sannio.
- **2006-2007:** (II semestre) Corso di Matematica II (CL in Ingegneria informatica); Università del Sannio;
- (II semestre) Corso di Matematica II (CL in Ingegneria delle Telecomunicazioni); Università del Sannio.
- **2007-2008:** (II semestre) Corso di Matematica II (CL in Ingegneria informatica); Università del Sannio.
- (II semestre) Corso di Matematica II (CL in Ingegneria delle Telecomunicazioni); Università del Sannio.
- (II semestre) Corso di Matematica II (CL in Ingegneria Civile ed Energetica); Università del Sannio.
- **2008-2009:** (II semestre) Corso di Matematica II (CL in Ingegneria informatica e Telecomunicazioni); Università del Sannio.
- (II semestre) Corso Matematica II (CL in Ingegneria Civile e CL in Ingegneria Energetica); Università del Sannio.
- (II semestre) Corso di Calcolo Integrale (CL in Informatica); Università di Roma “La Sapienza”.
- **2009-2010:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- (II semestre) Corso di Calcolo Integrale (CL in Informatica); Università di Roma “La Sapienza”.

- **2010-2011:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2011-2012:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2012-2013:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2013-2014:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2014-2015:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2015-2016:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2017-2018:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2018-2019:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2019-2020:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.
- **2020-2021:** Corso di Matematica (CL in Ingegneria Energetica) Università del Sannio.

## **Part V - Society memberships, Awards and Honors**

### Part VA - Society memberships:

Unione Matematica Italiana (1990-1998)  
 American Mathematical Society (1990-2009)  
 Swiss Mathematical Society (1994-2009)  
 Israel Mathematical Union (1998-2009)

### Part VB - Grants and Awards:

Prize of the Scuola Matematica Interuniversitaria (1989)  
 Grant of CNR = National Research Council (1989-90)  
 Grant of CNR = National Research Council (1990-92)  
 Prize of CNR = National Research Council (1991)  
 Prize of CNR = National Research Council (1992)  
 Grant of CNR = National Research Council (1993-95)  
 Grant of EMS = European Mathematical Society (1993)  
 Grant of CNR = National Research Council (1998-99)

Part VC - Honors 1:

**Editor** of the International Journal *Groups, Geometry, and Dynamics*, published by the European Mathematical Society (Editor in chief: Rostislav I. Grigorchuk).

**Director of the INdAM research unit** at the Università degli Studi del Sannio (Benevento), since 2014.

Part VC - Honors 2:

**The name TCS appears in the acknowledgments and thanks in the Preface of the following monographs:**

- [1] P. de la Harpe, *Topics in geometric group theory*. Chicago Lectures in Mathematics. University of Chicago Press, Chicago, IL, 2000.
- [2] A. Machì, *Gruppi. Una introduzione a idee e metodi della teoria dei gruppi*, Unitext Springer, 2007.
- [3] B. Bekka, P. de la Harpe, and A. Valette, *Kazhdan's property (T)*. New Mathematical Monographs, 11. Cambridge University Press, Cambridge, 2008.
- [4] D. Lind and B. Marcus, *An introduction to symbolic dynamics and coding. Second edition*. Cambridge University Press, Cambridge, 2021.
- [5] E. Bannai, E. Bannai, T. Ito, and R. Tanaka, *Algebraic combinatorics*. De Gruyter Series in Discrete Mathematics and Applications, 5. De Gruyter 2021.

## Part VI - Funding Information

Part VIA - Funding Information [PI-principal investigator]

- **[PI]** of the Italian national project GNAFA-CNR “Analytic, geometrical and combinatorial aspects of ergodic theory, of dynamical systems and group actions” 1999, circa 6,000 EURO.
- **[PI]** of the Italian national project INdAM “Analytic, geometrical and combinatorial aspects of the theory of dynamical systems and formal languages” 2001, circa 6,000 EURO.
- **[PI]** of the project BURC (Bollettino Universitario Regione Campania) “Harmonic Analysis and Dynamical Systems” (2008), 8000 EURO.

Part VIB - Funding Information [grants as I-investigator]

- **PRIN 1998-200:** Sistemi delle funzioni iterati. Operatori di Markov. Soluzioni periodiche di equazioni differenziali di tipo random. Coordinatore scientifico: Arrigo CELLINA.



- **PRIN 2000-2002:** ANALISI ARMONICA IN SPAZI EUCLIDEI E IPERBOLICI, SU GRUPPI DI LIE E SU STRUTTURE DISCRETE. ONDICELLE. Coordinatore scientifico: Giancarlo MAUCERI.
- **PRIN 2002-2004:** ANALISI DI FOURIER; GRUPPI DI LIE; STRUTTURE DISCRETE; ONDICELLE. Coordinatore scientifico: Giancarlo MAUCERI.
- **PRIN 2006-2008:** ANALISI DI FOURIER; GRUPPI DI LIE; STRUTTURE DISCRETE; ONDICELLE. Coordinatore scientifico: Fulvio RICCI.
- **PRIN 2008-2010:** ANALISI DI FOURIER; ANALISI ARMONICA SU GRUPPI DI LIE; ONDICELLE; ANALISI ARMONICA SU STRUTTURE DISCRETE. Coordinatore scientifico: Fulvio RICCI.
- **PRIN 2013-2016:** Varietà reali e complesse: geometria, topologia e analisi armonica. Coordinatore scientifico: Fulvio RICCI.
- **PRIN 2017-2020:** Real and Complex Manifolds: Geometry, Topology and Harmonic Analysis. Coordinatore scientifico: Fulvio RICCI.

#### Part VIC - Funding Information (Conferences organization)

- **INdAM and various other Italian institutions** funding for the organization of the "International Conference on GROUP THEORY: combinatorial, geometric, and dynamical aspects of infinite groups" Gaeta (2003): 20,000 EURO
- **NSF = National Science Foundation** funding for the organization of the "International Conference on GROUP THEORY: combinatorial, geometric, and dynamical aspects of infinite groups" Gaeta (2003): 15,000 USD.
- **INdAM** funding for the organization of the INdAM meeting "Geometric Group Theory, Random Walks and Harmonic Analysis" in Cortona (2004), 12,000 EURO.
- **INdAM and various other Italian institutions** funding for the organization of the Workshop "Groups and Languages" INdAM, Roma (2010): 10,000 EURO.
- **INdAM** funding for the organization of the INdAM meeting "Groups, Graphs, and Random Walks" in Cortona (2014): 14,000 EURO.
- **European Science Foundation** program **RGLIS** (Random Geometry for Large Interacting Systems and Statistical Mechanics) for the organization of the INdAM meeting "Groups, Graphs, and Random Walks" in Cortona (2014): 13,000 EURO.

#### Organization of INTERNATIONAL CONFERENCES:

- (1) **International Conference on GROUP THEORY: combinatorial, geometric, and dynamical aspects of infinite groups.** Gaeta (Italy), June 1-6, 2003.  
(<http://atlas-conferences.com/cgi-bin/calendar/d/facf89>).
- (2) **Incontro INdAM Geometric Group Theory, Random Walks and Harmonic Analysis.** Cortona (Italy), June 13-18, 2004.  
(<http://www.math.tugraz.at/~cortona/>).

(3) Workshop **Groups and Languages**. INdAM, Roma, September 9-10, 2010.  
(<http://www.altamatematica.it/it/node/68>).

(4) Incontro INdAM **Groups, Graphs and Random Walks**. Cortona, 2-6 June, 2014.  
(<http://www.math.tugraz.at/mathc/woess60/index.php>).

(5) **Rencontre Mathématique à Genève en l'honneur de Pierre de la Harpe**. Ginevra (Switzerland), 13-14 Octobre 2014.  
(<https://sites.google.com/site/delaharpe70/>).

(6) **Groupes, Géométrie et Systemes Dynamiques, une journée mathématique en l'honneur de Michel Coornaert**. IRMA (Strasbourg), le 27 février 2015.  
(<http://www.ing.unisannio.it/tullio/michel2.html>).

(7) **The 27th International Workshop on Cellular Automata (CA) and Discrete Complex Systems (DCS), AUTOMATA 2021**. July 12th-14th 2021, CIRM, Marseille, France, <https://automata2021.lis-lab.fr/>

### Research advisor:

1998-2001. **PhD Advisor** of dr Francesca Fiorenzi (XIII Ciclo di Dottorato). Title of the dissertation: *Cellular automata and finitely generated groups*. Università degli Studi di Roma “La Sapienza”. Dr Fiorenzi is presently *maître de conférences*, Laboratoire de Recherche en Informatique, Université Paris-Sud, France.

2003-2008. **PhD Advisor** of dr Daniele D’Angeli (XIX Ciclo di dottorato). Title of the dissertation: *Groups, Probability, Combinatorics: Different Aspects in Gelfand Pairs Theory* Università degli Studi di Roma “La Sapienza”. Dr D’Angeli is presently Ricercatore di tipo B (con abilitazione di II fascia) in Geometry at the Università telematica Niccolò Cusano in Rome.

2003-2008. **PhD Advisor** of dr Alfredo Donno (XIX Ciclo di dottorato). Title of the dissertation: *Gelfand Pairs: From Self-Similar Groups to Markov Chains* Università degli Studi di Roma “La Sapienza”. Dr Donno is presently *full professor* in Geometry at the Università telematica Niccolò Cusano in Rome.

2013-2016. **PhD Advisor** of dr Matteo Cavaleri (XXVIII Ciclo di dottorato). Title of the dissertation: *Algorithms and quantifications in amenable and sofic groups* Università degli Studi di Roma “La Sapienza”. Dr Cavaleri is presently PostDoc at Università telematica Niccolò Cusano in Rome.

**Member of the committee for PhD defenses in mathematics at:**

- Università “La Sapienza” di Roma (dr S. Carpi, dr M. Del Muto, dr S. Capobianco, dr N. Cavallucci),
- Università di Palermo (dr D.E. Otera),
- Université de Paris-Sud Orsay (dr D.E. Otera),
- Université “Louis Pasteur” de Strasbourg (dr F. Krieger),
- Université de Neuchâtel (dr S. Moon),
- École Polytechnique Fédérale de Lausanne (dr J. Kellerhals),
- Politecnico di Milano (dr M. Abu Ayyash),
- Università di Roma “Tor Vergata” (dr A. Abdallah),
- Kopenhagen University (dr K. Olesen Knudsen),
- University of Vienna (dr F. Berlai),
- Université de Genève (dr A. Pérez Pérez),
- Indian Institute of Science, Bangalore, India (dr Subhajit Ghosh),
- Graz Institute of Technology (dr Ch. Lindorfer),
- Instituto Argentino de Matemática, Buenos Aires, Argentina (dr Javier Brude).

**EDITORIAL activity for international journals:**

**Editor** of the International Journal *Groups, Geometry, and Dynamics*, published by the European Mathematical Society (Editor in chief: Rostislav I. Grigorchuk), since 2007

**Editor** of the *Bulletin of the Iranian Mathematical Society* (BIMS), published by Springer (Editor in chief: Majid Soleimani-damaneh), since 2021.

**Referee for INTERNATIONAL JOURNALS:**

Advanced in Applied Mathematics, Advances in Mathematics, Algebra and Discrete Mathematics, Algebraic Combinatorics, Annali di Matematica Pura e Applicata, Annales de l’Institut Fourier (Grenoble), Asian Journal of Mathematics, Asian-European Journal of Mathematics, **B**ulletin of the Belgian Mathematical Society (Simon Stevin), Bulletin des Sciences Mathématiques, Bulletin of Mathematical Sciences, **C**anadian Mathematical Bulletin, Colloquium Mathematicum, Communications in Algebra, **D**esigns, Codes and Cryptography (DESI), Discrete and Continuous Dynamical Systems, Discrete Mathematics and Theoretical Computer Science, L’Enseignement Mathématique, Ergodic Theory and Dynamical Systems, European Journal of Combinatorics, Experimental Mathematics, Expositiones Mathematicae, **F**orum Mathematicum, **G**eometriae Dedicata, Geometric and Functional Analysis (GAFA), “Groups, Geometry, and Dynamics”, **I**nterdisciplinary Information Sciences, International Journal of Algebra and Computation, International Journal of Group Theory, International Mathematics Research Notices (IMRN), Israel

Journal of Mathematics, Journal of Algebra, Journal of Algebraic Combinatorics, Journal of Dynamical and Control Systems, Journal of the European Mathematical Society (JEMS), Journal of Functional Analysis, Journal of Group Theory, Journal of Operator Theory, Letters in Mathematical Physics, Mathematische Nachrichten, Monatshefte für Mathematik, Natural Science, New York Journal of Mathematics, Pacific Journal of Mathematics, Palestine Journal of Mathematics, Potential Analysis, Proceedings of the Steklov Institute of Mathematics, Rocky Mountain Journal of Mathematics, Semigroup Forum, Theoretical Computer Science, Transactions of the American Mathematical Society.

**Referee for INTERNATIONAL CONFERENCES:**

**AUTOMATA 2019:** The 25th International Workshop on Cellular Automata and Discrete Complex Systems, June 26-28, 2020 Guadalajara (Mexico).

**DLT2020:** 24th International Conference on Developements in Language Theory, May 11-14, 2020, Tampa (Florida, USA).

**MFCS2020:** 45th International Symposium on Mathematical Foundations of Computer Science, August 24-28, 2020, Prague (Czech Republic).

**Referee for MONOGRAPHS:**

- (1) Cambridge University Press, series “Cambridge Studies in Advanced Mathematics”.
- (2) Princeton University Press, series “Annals of Mathematics Studies”.
- (3) Springer Verlag, series “Springer Monographs in Mathematics”.
- (4) Springer Verlag, series “Universitext”.

**Referee for RESEARCH PROPOSALS (national and international):**

- (1) FIRB (Futuro in Ricerca): 2 projects.
- (2) The Shota Rustaveli National Science Foundation of Georgia (Georgia): 2 projects.
- (3) Agence Nationale de la Recherche - ANR (France): 1 project.
- (4) Swiss National Science Foundation - SNF (Switzerland): 4 projects.
- (5) The Estonian Research Council - ETAG (Estonia): 1 project.

- (6) The Israel Science Foundation - ISF (Israel): 1 project.
- (7) The National Fund for Scientific and Technological Development, FONDECYT (Chile): 2 projects.

## Part VII Research Activities:

- (1) **Functional Analysis:** Operator Algebras:  $C^*$ -algebras, von Neumann algebras, automorphisms, Jones' index, subfactors. Amenability.
- (2) **Harmonic Analysis and Representation Theory:** Random walks on groups and graphs: discrete potential theory. Harmonic analysis on homogeneous spaces. Finite Gelfand pairs and applications. Representation theory. Representation theory of the symmetric group. Locally compact groups: Haar measure and Pontryagin duality.
- (3) **Geometric and Combinatorial Group Theory:** One relator groups, free groups, nilpotent groups, solvable groups. Asymptotic group theory: theory of growth, Gromov's theorem, the Grigorchuk group, amenability, Richard Thompson's groups. Random walks on groups. Group rings (Kaplansky conjectures on idempotents and on stable finiteness).
- (4) **Dynamical Systems and Ergodic Theory:** Symbolic Dynamics; Cellular Automata; shifts and subshifts; entropy. Topological Dynamics and Ergodic theory on compact spaces. Algebraic Dynamical Systems (à la Klaus Schmidt). Ergodic Ramsey Theory. Ergodic theorems. Measurable equivalence relations.
- (5) **Combinatorics:** Combinatorial number theory. Ramsey theory. Graph theory: spectral theory, expanders, Ramanujan graphs.
- (6) **Probability:** Finite Markov chains, random walks on graphs and groups. System Theory.
- (7) **Theoretical Computer Science:** Theory of formal languages: regular languages, context-free languages; entropy. Ergodic theory on compact spaces. Coding theory. Automata: finite state automata, push-down automata, Turing machines, Mihly automata (groups associated with automata), Rabin automata, cellular automata. Decision problems (group word problem, cellular automata).

## Part VIII Summary of Scientific Achievements

### Part VIII-1: Participation in conferences and workshops:

- (1) "Quantum groups, operator algebras and duality and their application to physics": International Conference sponsored by Istituto Nazionale di Alta Matematica (INdAM): Cortona, September 25 - 30, 1989.
- (2) "Advanced Research Workshop and Conference on Operator Algebras, Mathematical Physics and Low Dimensional Topology": Istanbul July 1 - 5, 1991.
- (3) International Conference on "Operator Algebras", a satellite conference of the ECM (European Congress of Mathematics) Paris 1992: Orleans July 1 - 4, 1992.
- (4) West-Operator Algebra Conference: Reno (Nevada) October 25-27, 1992.

- (5) CBMS conference “Classification of Amenable Subfactors” ten lectures by S. Popa: Eugene (Oregon) August 23-29, 1993. (6) International Conference “Algèbres d’ Opérateurs”, a satellite conference of the ICM (International Congress of Mathematics) Zurich 1994: Genève July 19-23, 1994.
- (7) Workshop on “Cohomology of groups”, Chateau d’ Oex (Switzerland): March 29 - 31, 1995.
- (8) “XV Convegno Nazionale di Analisi Armonica”, Alghero (Italy): June 19 - 23, 1995.
- (9) “XVI Convegno Nazionale di Analisi Armonica”, Grado (Italy) May 20 - 23, 1996.
- (10) Euroconference in Algebra and Discrete Mathematics: “Group Theory: from Finite to Infinite”; Il Ciocco Castelvecchio Pascoli (LU), Italy) July 13 - 18, 1996.
- (11) “XVII Convegno Nazionale di Analisi Armonica”, S. Margherita Ligure (Italy) March 21-24, 1997.
- (12) Workshop on General Combinatorial Group Theory (CRM Montreal): April 5-13, 1997.
- (13) INdAM Meeting “Random Walks and Discrete Potential Theory” Cortona June 23 - 27, 1997.
- (14) Workshop on “Géométrie et Combinatoire des Groupes” Geneva (Switzerland): February 23 - 27, 1998.
- (15) “XVIII Convegno Nazionale di Analisi Armonica”, Ponza (Italy): June 22-26, 1998.
- (16) International Conference on the 90th anniversary of L.S. Pontryagin, Steklov Mathematical Institute and Lomonosov University, Moscow: August 31 - September 6, 1998.
- (17) International conference “Mathematics Towards the Third Millennium” Accademia dei Lincei (Roma): May 26-29, 1999.
- (18) “XIX Convegno Nazionale di Analisi Armonica”, Aosta (Italy): June 7-10, 1999.
- (19) International Conference ‘Paul Erdős and his mathematics” Budapest: July 4-11, 1999.
- (20) Rencontres de Mathématiques : “Automata 99”, ENS Lyon (France): October 27-29, 1999.
- (21) “XX Convegno Nazionale di Analisi Armonica”, Como June 5-7, 2000.
- (22) International Conference “Geometric and Combinatorial Group Theory” Technion, Haifa (Israel), June 13-23, 2000.
- (23) Workshop on “Groupes et Languages”. Neuchatel (CH), June 24-27, 2000.
- (24) “XXI Convegno Nazionale di Analisi Armonica”, Piano di Sorrento, May 28-31, 2001.
- (25) ESI Workshop on “Random walks and geometry”: Vienna, June 25 - July 6, 2001.
- (26) “Probabilistic models and disordered systems”: Roma, February 4-7, 2002.
- (27) Rencontres de Mathématiques : “Groupes associés aux automates”: ENS Lyon, May 3-4, 2002.
- (28) “XXII Convegno Nazionale di Analisi Armonica” Isole Tremiti, June 3-7, 2002.
- (29) Rencontres de Mathématiques : “Property  $\tau$ ”: ENS Lyon, June 13-14, 2002.
- (30) International workshop on “Semigroups, Automata, and Formal Languages”: Crema, June 17-21, 2002.
- (31) Oberwolfach Meeting: “Profinite Groups and Discrete Subgroups of Lie Groups”: Oberwolfach May 18-24, 2003

- (32) “XXIII Convegno Nazionale di Analisi Armonica” Padova, May 26-29, 2003.
- (33) “International Conference on Group Theory: combinatorial, geometrical and dynamical aspects of infinite groups” Gaeta (LT), June 1-6, 2003. (34) “Probability in Mathematics. In Honour of Hillel Furstenberg” Jerusalem and Beer Sheba (Israel) June 17 - 24, 2003.
- (35) “Geometric and Group Theory Methods in Algebraic Structures” September 15-27, 2003, Tbilisi-Batumi, Georgia.
- (36) “Automorphic Forms, Group Theory and Graph Expansion” IPAM-UCLA Los Angeles. February 9 - 13, 2004.
- (37) “XXIV Convegno Nazionale di Analisi Armonica”. Sestri Levante March 29-31, 2004.
- (38) INdAM Meeting “Geometric Group Theory, Random Walks and Harmonic Analysis” June 13–20 2004, Cortona Italy).
- (39) Conference on the occasion of Pierre de la Harpe’s 60th birthday: Geneva, Switzerland. September 30 - October 2, 2004.
- (40) “Asymptotic group invariants and their applications”: Fall Workshop 1: Math. Dept., Texas A & M University, College Station, TX, Nov 6, 2004.
- (41) “Asymptotic group invariants and their applications”: Fall Workshop 2: Math. Dept., Texas A & M University, College Station, TX, Dec 8, 2004.
- (42) “XXV Convegno Nazionale di Analisi Armonica”. Bologna, April 5-9, 2005.
- (43) International Conference “Asymptotic and Probabilistic Methods in Geometric Group Theory”: University of Geneva, Switzerland. June 20-25, 2005.
- (44) “5th International Algebraic Conference”. Odessa (Ukraine), July 20-27, 2005.
- (45) ESI Workshop on “Discrete Probability”, Vienna, March 20-25, 2006.
- (46) “Ischia Group Theory 2006”, Ischia (NA), March 29th - April 1st, 2006.
- (47) “XXVI Convegno Nazionale di Analisi Armonica”. Cortona, May 22-26, 2006.
- (48) “Special day on Groups and Dynamics” Fall Workshop, Texas A & M University, College Station, TX, Nov 18, 2006.
- (49) “XXVII Convegno Nazionale di Analisi Armonica”. Caramanico Terme (PS), Italy, May 21-26 2007.
- (50) Workshop on “Groups and their action”, Banach Center in Bedlewo, Poland, July 1-7, 2007.
- (51) “6th International Algebraic Conference”. Kamyanets-Podilsky (Ukraine), July 1-7, 2007.
- (52) “The First Petra International Conference on Mathematics”. Al-Hussein Bin Talal University, Ma’an, Jordan, October 24-25, 2007.
- (53) “Groups generated by automata”, workshop at the Centro Stefano Franscini (ETH Zuerich) at Ascona (Switzerland), February 10-15, 2008.
- (54) “Ischia Group Theory 2008”, Ischia (NA), April 2-4, 2008.
- (55) “XXVIII Convegno Nazionale di Analisi Armonica”. Perugia, Italy, May 19-23, 2008.
- (56) “Analyse, géométrie et dynamique sur les groupes”, Neuchâtel, June 11-13, 2008.
- (57) International conference “Differential Equations and Topology” dedicated to the Centennial of L.S. Pontryagin”, Moscow, June 17-22, 2008.
- (58) ESI Workshop on “Structural Probability” Vienna, November 3-14, 2008.

- (59) "Ischia Group Theory 2010", Ischia (NA), April 14-17, 2010.
- (60) "XXX Convegno Nazionale di Analisi Armonica", Gargnano (BS), June 6-11, 2010.
- (61) "First Joint Meeting American Mathematical Society - Sociedad de Matemática de Chile" Pucón (Chile), December 15–18, 2010.
- (62) Workshop on Ergodic Theory and Dynamical systems, Rice University, Houston TX, March 21-22, 2011.
- (63) Workshop on "Group Actions on Measure Spaces" Texas A & M University, College Station TX, March 24-27, 2011.
- (64) Oberwolfach meeting "Finite-dimensional approximations of groups and algebras", Oberwolfach (Germany), May 16-20, 2011.
- (65) "XXXI Convegno Nazionale di Analisi Armonica", INdAM Roma, June 2011.
- (66) Agora Meeting (Actions, Groups, Operator Algebras *Topological Dynamics*, Nouan-le-Fuzelier, Orléans, January 9-13, 2012.
- (67) "Ischia Group Theory 2012", Ischia (NA), March 26-29, 2012.
- (68) Séminaire LaWiNe (Lausanne-Wien-Neuchâtel, Mathematical Seminar on Sofic Groups), Université de Genève, December 21st 2012.
- (69) Séminaire Tripode, Institut Camille Jordan (Lyon 1), February 22nd, 2013.
- (70) Kervaire Seminar "Geometry of groups 2013", Les Diablerets (Switzerland), March 10-15, 2013.
- (71) ICTP-SISSA-Moscow School on "Geometry and Dynamics", Trieste, June 3-15, 2013.
- (72) "International Workshop on Noncommutative Analysis And Its Future Prospects" Hokkaido University, Sapporo, Japan, August 5-7, 2013.
- (73) "Groups Acting on Rooted Trees and around" (IHP trimester on random walks and asymptotic geometry of groups) January 6 - April 4, 2014), IHP Paris, February 24-28, 2014.
- (74) "Ischia Group Theory 2014", Ischia (NA), April 1-5, 2014.
- (75) INdAM Meeting "Groups, graphs and Random Walks" Cortona June 2-6, 2014.
- (76) "Topics in Geometric Group Theory" IMAR Bucharest, Romania, September 29 - October 5, 2014.
- (77) "Workshop on Symbolic Dynamics on finitely presented Groups" CMM Santiago de Chile, Chile, December 15 - 19, 2014.
- (78) "XXXV Convegno Nazionale di Analisi Armonica", Matera (Italy) May 28th, 2015.
- (79) "Growth, Symbolic Dynamics and Combinatorics of Words in Groups", École normale supérieure Paris, June 1-5, 2015.
- (80) AMS-EMS-SPM International Meeting, Porto (Portugal), June 9-14, 2015.
- (81) "Geometric and Probabilistic methods in Group Theory and Dynamical Systems", Texas A & M University, November 9-12, 2015.
- (82) "Ischia Group Theory 2016", Ischia (NA), March 29th - April 2nd, 2016.
- (83) "Dynamics, Geometry and Number Theory" Institut Henri Poincaré (Paris) June 13-17, 2016.
- (84) "Group Theory and Operator Algebras", IMAR Bucharest, September 26-29, 2016.



- (85) International Workshop on Algebraic Combinatorics, Hefei University (China), October 28-31, 2016.
- (86) International conference “Groups and computation: interactions between geometric group theory, computability, and computer science”, Stevens Institute of Technology, Hoboken NJ, June 26-30, 2017.
- (87) Advanced school “Entropies and soficity”, ENS et Université de Lyon 1, Lyon (France), January 7-11, 2017.
- (88) “Ischia Group Theory 2018”, Ischia (NA), March 19-23, 2018.
- (89) EMS Conference “Emil Artin International Conference”, Yerevan (Armenia), May 27- June 3, 2018.
- (90) “UMI-SIMAI-PTM Joint meeting”, Wroclaw (Poland), 17-20 September 2018.
- (91) Workshop “Groups and Group Rings” The Modern Algebra and its Applications Lab of the St.Petersburg State University, St. Petersburg (Russia), June 3–8, 2019.
- (92) “AUTOMATA 19: the 25th International Workshop on Cellular Automata and Discrete Complex Systems”, Guadalajara (Mexico), June 26–28, 2019.
- (93) The International Conference and PhD-Master Summer School Groups and Graphs, Designs and Dynamics, Yichang, China, August 12–25, 2019.
- (94) Minisymposium on discrete dynamical systems, Shanghai Jiao Tong University, Shanghai, China, August 26-28, 2019.
- (95) Texas Geometry and Topology, Texas A& M University, College Station (TX), November 8–10, 2019.
- (96) Expanding Dynamics-Creative Online Ventures in Dynamics (online series of lectures and meetings) I, II, III, IV, V, VII, VIII, IX, X, XII (June 2020 - June 2021).

### **Part VIII-2 Talks delivered:**

- (1) *Canonical actions on the Cuntz algebra of infinite order*: talk at the Functional Analysis Seminar (Ed Effros) Math. Dept. UCLA; February 1991.
- (2) *Indice di Jones, quadrati commutativi ed il problema della classificazione dei sotto-fattori*: talk at the Operator Algebras and Algebraic Quantum Field Theory Seminar (S. Doplicher), Dipartimento di Matematica, Università di Roma, La Sapienza; June 1992.
- (3) *Random walks on discrete groups: a theorem of Varopoulos*: talk at the summer course on “Harmonic Analysis” in Cortona (Italy); July 1992.
- (4) *Local Observables and Particle Statistics (after Doplicher–Haag–Roberts)*: series of seminars at the Math. Dept. UCLA, Winter Quarter 1992-93.
- (5) *Approximately inner and centrally free commuting squares of type  $II_1$  factors and their classification*: talk at the Functional Analysis Seminar (Ed Effros) Math. Dept. UCLA; May 1994.
- (6) *Le théorème spectral pour les opérateurs auto-adjoints*: talk at the Seminaire Mathématique de la Suisse Romande sur la cohomologie des groupes discrets, Lausanne (Switzerland); February 1995.
- (7) *Discrete potential theory, combinatorial Laplacian and random walks*: talk at the Workshop “Cohomology of groups”, Chateau d’ Oex (Switzerland); March 1995.

- (8) *Operatori di Markov su gruppi iperbolici*: talk at the Convegno di Analisi Armonica, Alghero (Italy); June 1995.
- (9) *Sur un théorème de Varopoulos*: talk at the Section de Mathématiques de l'Université de Genève; October 1995.
- (10) *Moyennabilité et croissance des groupes à un seul relateur*: talk at the Section de Mathématiques de l'Université de Genève; febbraio 1996.
- (11) *Amenabilità e crescita di gruppi ad un solo relatore I, II*: talks at the Harmonic Analysis Seminar (A. Figà-Talamanca and C. Nebbia), Dipartimento di Matematica, Università di Roma, La Sapienza; March 1996.
- (12) *Metodi analitici nella teoria dei gruppi: hopfianità dei gruppi liberi*: talk at the Harmonic Analysis Seminar (A. Figà-Talamanca and C. Nebbia), Dipartimento di Matematica, Università di Roma, La Sapienza; March 1996.
- (13) *Aspetti analitici nella teoria combinatorica dei gruppi*: talk at the Convegno Nazionale di Analisi Armonica, Grado (Italy); May 1996.
- (14) *Amenability and growth of one-relator groups*: talk at the Euroconference in Algebra and Discrete Mathematics: "Group Theory: from Finite to Infinite"; Il Ciocco Castelveccchio Pascoli (LU) Italy; July 1996.
- (15) *Amenable groups and cellular automata*: talk at the Seminar on Dynamical Systems (D.V. Anosov), Moscow State University; December 1996.
- (16) *Grafi amenabili e grafi paradossali*: talk at the Harmonic Analysis Seminar (A. Figà-Talamanca and C. Nebbia), Dipartimento di Matematica, Università di Roma, La Sapienza; March 1997.
- (17) *Gruppi amenabili ed automi cellulari*: talk at the Convegno Nazionale di Analisi Armonica, S. Margherita Ligure (Italy); March 1997.
- (18) *Graphes moyennables et graphes paradoxales*: talk at the Section de Mathématiques de l'Université de Genève; March 27, 1997.
- (19) *Amenability and growth of one-relator groups*: talk at the Workshop on General Combinatorial Group Theory, CRM (Montreal); April 1997.
- (20) *Growth series and random walks on some hyperbolic graphs*: talk at the Conference "Random Walks and Discrete Potential Theory", Cortona (Italy); June 24, 1997.
- (21) *Moyennabilité et paradoxes*: Colloquium at the Math. Dept. Université de Neuchâtel, Neuchâtel (Switzerland); October 1997.
- (22) *Amenability and paradoxes*: talk at the Math. Dept. Università degli Studi di Milano, Milano; January 12, 1998.
- (23) *Groupes moyennables et automates cellulaires*: talk at the Workshop "Géométrie et Combinatoire des groupes", Geneva; January 23, 1998.
- (24) *Around Amenability*: talk at the Convegno Nazionale di Analisi Armonica, Ponza (Italy); June 25, 1998.
- (25) *Amenabilità e paradossi*: talk at the Dipartimento di Matematica "Vito Volterra", Università degli Studi di Ancona, Ancona; July 8, 1998.
- (26) *Paradoxical decompositions of free Burnside groups*: talk at the International Conference in Mathematics on the 90th anniversary of L.S. Pontryagin, Moscow; August 31, 1998.

- (27) *Teoria ergodica e teoria combinatorica dei numeri*: series of seminars held in collaboration with Fabio Scarabotti at the Dipartimento di Matematica “Guido Castelnuovo” dell’Università “La Sapienza”, Roma: January - June 1999.
- (28) *Théorie de Ramsey ergodique*: talk at the Section de Mathématiques de l’Université de Genève; May 21, 1999.
- (29) *Un invito alla teoria di Ramsey ergodica*: talk at the Convegno Nazionale di Analisi Armonica, Aosta; June 10, 1999.
- (30) *Garden of Eden Theorems for Amenable subshifts*: Hebrew University Jerusalem (IL), April 6, 2000.
- (31) *Il gruppo di Grigorchuk di crescita intermedia*: Convegno Nazionale di Analisi Armonica. Como, June 7, 2000.
- (32) *Paradoxical decompositions of free Burnside groups*: International Conference “Geometric and Combinatorial Group Theory”. Technion, Haifa (IL) June 13, 2000.
- (33) *Inner Amenability of Richard Thompson’s group  $F$* : Institut für Mathematik, TU Graz, December 2000.
- (34) *Croissance des langages libres du contexte*: Departement de Mathématiques, Université de Neuchâtel, Neuchâtel (Svizzera); May 3rd, 2001.
- (36) *Growth tightness of context free languages*: Section de Mathématiques, Université de Genève, May 11, 2001.
- (37) *Linguaggi context-free e loro crescita*: Convegno Nazionale di Analisi Armonica, Piano di Sorrento, May 30, 2001.
- (38) *Growth tightness of context free languages*: “Random Walks and Geometry” at the ESI Vienna, June 28, 2001.
- (39) *Entropy of graphs, formal languages and symbolic dynamical systems*. Royal Institute of Technology (KTH), Stockholm, December 5, 2001.
- (40) *Random walks e amenabilità: il teorema di Tarski*: “Probabilistic models and disordered systems”: Roma February 4-7, 2002.
- (41) *Metodi di random walks in teoria dei gruppi: amenabilità e hopfianità*: Seminario di Probabilità di Roma I. Roma February 20, 2002.
- (42) *Introduzione agli espansori e ai grafi di Ramanujan*: Istituto Nazionale di Alta Matematica, Roma, February 27, 2002.
- (43) *La proprietà (T) di Kazhdan*: Istituto Nazionale di Alta Matematica, Roma May 21 and 28, 2002.
- (44) *Entropie de graphes et applications*: Institut de Mathématiques, Université de Neuchâtel, May 27, 2002.
- (45) *Espansori anisotropi: il teorema di Alon-Boppana*: “Convegno Nazionale di Analisi Armonica” Isole Tremiti, June 3, 2002.
- (46) *Entropy of symbolic dynamical systems and of formal languages*: International workshop on “Semigroups, Automata, and Formal Languages”. Crema, June 19, 2002.
- (47) *Distribuzioni e misure sulla frontiera dell’albero*: Istituto Nazionale di Alta Matematica “F. Severi”. Roma, Nov 6 2002.
- (48) *The Tarski number of free Burnside groups*. Mathematics Department, UC San Diego. Jan 24 2003.

- (49) *Amenable groups, symbolic dynamical systems, formal languages and their entropy*. Department of Mathematics, Texas A & M University. Jan 29 2003.
- (50) *Amenable groups: Tarski's theorem*. Department of Mathematics, Rutgers University. Feb 5 2003.
- (51) *Amenable groups, symbolic dynamical systems, formal languages and their entropy*. Department of Mathematics . Princeton University. Feb 6 2003.
- (52) *La teoria di Kaloujnine e i codici di Reed-Muller*. “Convegno Nazionale di Analisi Armonica”. Padova May 27 2003.
- (53) *Amenable groups and paradoxical decompositions: a theorem of Tarski*. Mathematics Department University of Haifa (Israel), June 15 2003.
- (54) *Amenable groups and paradoxical decompositions: a theorem of Tarski*. Al Quds University, Abu Dis (Palestine Authority), June 21st 2003.
- (55) *Amenable groups and paradoxical decompositions: a theorem of Tarski*. “Geometric and Group Theory Methods in Algebraic Structures” September 15-27, 2003, Tbilisi-Batumi, Georgia.
- (56) *Amenability for Banach Algebras,  $C^*$ -algebras and von Neumann algebras*. Series of talks at the Math Dept UCSD (Feb 2004), San Diego, CA.
- (57) *Generalized Kaloujnine groups, uniseriality and the height of automorphisms*. Section de Mathematiques, Université de Genève, March 19 2004.
- (58) *Gruppi a crescita lineare*. “Convegno Nazionale di Analisi Armonica”. Sestri Levante 29 march 2003.
- (59) *Finite Gelfand pairs: (new) examples and application*. Math Dept Texas A & M University, College Station, TX, Sept 15 2004.
- (60) *Coppie di Gelfand finite: nuovi esempi ed applicazioni*. Dipartimento di Matematica “Guido Castelnuovo” dell’Università “La Sapienza”, Roma. Sept 27 2004.
- (61) *Couples de Gelfand finis : (nouveaux) exemples et applications*. Conference on the occasion of Pierre de la Harpe’s 60th birthday, Geneva, Switzerland. October 2nd 2004.
- (62) *Amenability and paradoxical decompositions: Tarski's theorem*. Math. Dept., Texas A & M University, College Station, TX, October 6th 2004.
- (63) *Amenability and paradoxical decompositions: Tarski's theorem*. Math. Dept., University of Iowa, Iowa City, IA, October 29th 2004.
- (64) *Finite Gelfand pairs: (new) examples and application*. Math. Dept., University of Iowa, Iowa City, IA, November 1st 2004.
- (65) *Cellular Automata, subshifts and amenable groups*. Fall Workshop 1: Asymptotic group invariants and their applications. Math. Dept., Texas A & M University, College Station, TX, November 6th 2004.
- (66) *Automata, linear languages and their growth*. Fall Workshop 2: Asymptotic group invariants and their applications. Math. Dept., Texas A & M University, College Station, TX, December 8th 2004.
- (67) *On a graph of intermediate growth* Math. Dept., Texas A & M University, College Station, TX, January 19th 2005.
- (68) *Coppie di Gelfand finite: nuovi esempi ed applicazioni*. “Convegno Nazionale di Analisi Armonica”. Padova, April 9th 2005.

- (69) *Cellular automata, amenability and group rings*. 5th International Algebraic Conference, Odessa (Ucraina), July 20-27 2005.
- (70) *Il teorema dell'alternativa di Tits*. Dipartimento di Matematica "G. Castelnuovo", Università di Roma "La Sapienza", February 15th 2006.
- (71) *Trees, wreath products and finite Gelfand pairs*, ESI Vienna Workshop in "Discrete Probability", March 21st 2006.
- (72) *Gruppi sofici e surgiuntività di alcuni sistemi dinamici* "Convegno Nazionale di Analisi Armonica". Cortona, May 22nd 2006.
- (73) *Linear cellular automata, sofic groups and stable finiteness of group rings*, Algebra Colloquium, Math. Dept. UCSD, November 6th, 2006.
- (74) *Linear cellular automata, sofic groups and stable finiteness of group rings*, Functional Analysis Colloquium, Math. Dept. UCLA, November 9th, 2006.
- (75) *Growth of finitely generated groups and Gromov's theorem for groups of polynomial growths : I, II & III*, Special Student Seminar (Minicourse), Math. Dept. Rice University, Houston, November 16-17, 2006.
- (76) *Linear cellular automata, sofic groups and stable finiteness of group rings*, Special Colloquium, Math. Dept. Rice University, Houston, November 17th, 2006.
- (77) *Minimal ergodic topological action do not determine the measurable orbit equivalence class*, "Special day on Groups and Dynamics" Fall Workshop, Texas A & M University, College Station, TX, November 18th, 2006.
- (78) *Minimal ergodic topological action do not determine the measurable orbit equivalence class*, Convegno Nazionale di Analisi Armonica, Caramanico Terme (PS), Italy, May 24th, 2007.
- (79) *Minimal ergodic topological action do not determine the measurable orbit equivalence class*, Workshop "Groups and their actions", Banach Center Bedlewo (Poland), July 2nd, 2007.
- (80) *Minimal ergodic topological action do not determine the measurable orbit equivalence class*, "6th International algebraic conference in Ukraine", Kamyanets-Podilsky, July 6th, 2007.
- (81) *Finite Gelfand pairs: new examples and applications*, "The First Petra International Conference in Mathematics", Al-Hussein Bin Talal University, Ma'an (Jordan), October 25th, 2007.
- (82) *Automates cellulaires et groupes : groupes moyennables et groupes sophiques*, Séminaire de théorie de groupes, Université de Paris VI (Chevaleret), Paris, November 5th, 2007.
- (83) *Expansive actions on uniform spaces and surjective maps*, Convegno Nazionale di Analisi Armonica, Perugia, May 22nd, 2008.
- (84) *Espaces uniformes, automates cellulaires et groupes surjonctifs*, "Analyse, géométrie et dynamique sur les groupes", Neuchâtel, June 11-13, 2008.
- (85) *Uniform spaces, cellular automata and surjective groups*, International conference "Differential Equations and Topology" dedicated to the Centennial of L.S. Pontryagin", Moscow, June 17-22, 2008.

- (86) *Uniform spaces, cellular automata and surjunctive groups*, “ESI Workshop on Structural Probability”, Schrodinger Institute, Vienna, November 5th, 2008.
- (87) *Cellular automata and groups: dynamical aspects of infinite groups*, TU Graz, October 1st, 2009.
- (88) *Automates cellulaires et groupes: aspects dynamiques des groupes infinis*, Section de Mathématiques, Université de Genève, November 5th, 2009.
- (89) *Cellular automata and groups: dynamical aspects of infinite groups*, TIFR Mumbai (India), December 19th, 2009.
- (90) *Automata in group theory and in the theory of formal languages* (Minicourse), TIFR Mumbai (India), December 19-22, 2009.
- (91) *Cellular automata and groups: dynamical aspects of infinite groups*, Ramanujan Institute of Mathematics, Madras/Chennai (India), December 24th, 2009.
- (92) *On the Okounkov-Vershik approach to the representation theory of the symmetric groups* (Minicourse), Kyushu University, Fukuoka, Japan, February 2010.
- (93) *Cellular automata and groups: dynamical aspects of infinite groups*, Kyushu University, Fukuoka, Japan, February 10th, 2010.
- (94) *Automi cellulari e gruppi: aspetti dinamici dei gruppi infiniti* Dipartimento di Matematica e Informatica Università di Salerno, February 17th, 2010.
- (95) *On the Okounkov-Vershik approach to the representation theory of the symmetric groups*, XXX Convegno Nazionale di Analisi Armonica, Gargnano (BS), June 2010.
- (96) *Algebraic cellular automata*, TU Graz, Austria, September 2010.
- (97) *Minimal topological actions do not determine the measurable orbit equivalence class*, First Joint Meeting American Mathematical Society - Sociedad de Matemática de Chile, Pucón (Chile), December 16, 2010
- (98) *On surjunctive groups*, Rice University, Houston TX, March 2011.
- (99) *On surjunctive groups*, Texas A & M University, College Station TX, March 2011.
- (100) *Symbolic Dynamics and One-dimensional Cellular Automata* (Minicourse), Chebyshev Laboratory, St.Petersburg State University, San Pietroburgo (Russia), April 24-28, 2011.
- (101) *Symbolic Dynamics and Cellular Automata on Groups*, Chebyshev Lab Colloquium, Chebyshev Laboratory, St.Petersburg State University, San Pietroburgo (Russia), April 28th, 2011.
- (102) *Symbolic dynamics and sofic groups*, Oberwolfach Seminar, May 16th, 2011.
- (103) *Surjunctivity of cellular automata and sofic groups*, XXXI Convegno Nazionale di Analisi Armonica, INdAM Roma, June, 2011.
- (104) *Surjunctivity of cellular automata and sofic groups*, UCLA, Los Angeles, USA, August 17th, 2011.
- (105) *On surjunctivity I & II*, Séminaire LaWiNe (Lausanne-Wien-Neuchâtel, Mathematical Seminar on Sofic Groups), Université de Genève, December 21st, 2012.
- (106) *Groupes et langages : le problème des mots*, ENS Lyon, February 18th, 2013.
- (107) *Automates cellulaires et groupes*, Séminaire Tripode, Institut Camille Jordan (Lyon 1), February 22nd, 2013.

- (108) *Groupes et langages : le problème des mots*, Séminaire Quantique, IRMA, Université de Strasbourg, March 4th, 2013.
- (109) *Cellular automata, amenable groups, surjunctivity, and sofic groups*, University of Warwick, May 17th, 2013.
- (110) *The Garden of Eden theorem for cellular automata over amenable groups (MINICOURSE)*, ICTP-SISSA-Moscow School on Geometry and Dynamics, Trieste, June 3-15, 2013.
- (111) *Cellular automata and groups*, Kyoto University, Kyoto, Japan, August 2nd, 2013.
- (112) *Advanced Mackey theory for finite groups*, “International Workshop on Noncommutative Analysis And Its Future Prospects” Hokkaido University, Sapporo, Japan, August 7th, 2013.
- (113) *Cellular automata and groups*, University of Tokyo, Tokyo, Japan, August 9th, 2013.
- (114) *Cellular automata on rooted trees*, IHP Paris, February 28th, 2014.
- (115) *Introduction to sofic groups*, UCSD, San Diego, August 4th, 2014.
- (116) *Introduction to linearly sofic groups*, UCSD, San Diego, August 5th, 2014.
- (117) *Rabin automata and cellular automata on regular rooted trees*, UCSD, August 8th, 2014.
- (118) *Aspetti algebrici, analitici e logico-informatici della teoria degli automi cellulari sui gruppi*. Università di Verona, September 25th 2014.
- (119) *On soficity and surjunctivity for monoids*, IMAR Bucharest, Romania, October 1st, 2014.
- (120) *Multipass automata and group word problems*, TU Graz, Austria, October 10th, 2014.
- (121) *Sur la soficité et la surjonctivité des monoïdes*, Université de Genève, October 16th, 2014.
- (122) *Cellular automata and groups: Garden of Eden Theorem, Amenable Groups, Surjunctivity and Sofic Groups*, MINICOURSE at the “Workshop on Symbolic Dynamics on finitely presented Groups” CMM Santiago de Chile, Chile, December 15 - 19, 2014.
- (123) *A Garden of Eden Theorem for hyperbolic dynamical systems*, XXXV Convegno Nazionale di Analisi Armonica, Matera (Italy) May 28th, 2015.
- (124) *On soficity and surjunctivity for monoids*, AMS-EMS-SPM International Meeting, Porto (Portugal), June 10, 2015.
- (125) *Expansive actions of countable amenable groups with the Myhill property*, Texas A & M University, November 11th, 2015.
- (126) *Cellular Automata and Groups*, University of South Florida, November 13th, 2015.
- (127) *MINICOURSE: Automata and groups*, TU Graz (Austria), January-February 2016.
- (128) *A Garden of Eden Theorem for Anosov diffeomorphisms on tori*, TU Graz, January 19th, 2016.
- (129) *The Garden of Eden Theorem: old and new*, IMAR Monthly Lecture, IMAR Bucharest, September 28th, 2016.
- (130) *The Garden of Eden Theorem: old and new*, Copenhagen University, October 5th, 2016.

- (131) *Multiplicity-free induced representations*, International Workshop on Algebraic Combinatorics, Hefei University (China), October 28th, 2016.
- (132) *Product of (finite) graphs and expanders*, Shanghai Jao Tong University (China), November 2nd, 2016.
- (133) *The Garden of Eden Theorem: old and new*, Shanghai Jao Tong University (China), November 3rd, 2016.
- (134) *Expansive actions of amenable groups and homoclinic points*, University of Vienna, November 23rd, 2016.
- (135) MINICOURSE: *The Garden of Eden Theorem: from symbolic dynamics to Anosov diffeomorphisms and to algebraic dynamical systems*, UFSC, Florianopolis (Brazil), March 2017.
- (136) *Surjunctivity of dynamical systems: old and new*, International conference “Groups and computation: interactions between geometric group theory, computability, and computer science”, Stevens Institute of Technology, Hoboken NJ, June 26, 2017.
- (137) *The Garden of Eden theorem and surjunctivity: old and new. I and II*, Chinese Academy of Sciences, Beijing (China), September 6 and 7, 2017.
- (138) Minicourse: *Amenability, growth, and dynamical systems*. Shanghai Jao Tong University, Shanghai (China), September 2017.
- (139) *A Garden of Eden Theorem for Harmonic Models*, University of Illinois at Urbana-Champaign IL, January 23rd, 2018.
- (140) *The Garden of Eden Theorem: old and new*, MATH COLLOQUIUM, University of Illinois at Urbana-Champaign IL, January 25th, 2018.
- (141) *The Garden of Eden Theorem and Dynamical Systems*, EMS Conference “Emil Artin International Conference”, Yerevan (Armenia), May 27, 2018.
- (142) *The Garden of Eden for algebraic dynamical systems*, the Graduate Center (CUNY), New York, 7 September 2018.
- (143) *The Garden of Eden for algebraic dynamical systems*, “UMI-SIMAI-PTM Joint meeting” (session: dynamical systems and ergodic theory), Wroclaw (Poland), 18 September 2018.
- (144) *Surjunctivity for algebraic dynamical systems*, “UMI-SIMAI-PTM Joint meeting” (session: group theory), Wroclaw (Poland), 19 September 2018.
- (145) Minicourse: *Amenability of groups*. Thematic Research Program: Operator Algebras, Groups and Applications to Quantum Information, Universidad Carlos III de Madrid, (Spain), March 2019.
- (146) *Garden of Eden theorems*, Workshop “Groups and Group Rings” The Modern Algebra and its Applications Lab of the St.Petersburg State University, St. Petersburg (Russia), June 3rd, 2019.
- (147) *The Garden of Eden Theorem: from cellular automata to algebraic dynamical systems*, “AUTOMATA 19: the 25th International Workshop on Cellular Automata and Discrete Complex Systems”, Guadalajara (Mexico), June 26th, 2019.
- (148) Minicourse: *Topics in representation theory*. The International Conference and PhD-Master Summer School on Groups and Graphs, Designs and Dynamics. Yichang (China), August 2019.



- (149) *The Garden of Eden Theorem: from cellular automata to algebraic dynamical systems*, Shanghai Jiao Tong University, Shanghai, China, August 27, 2019.
- (150) *Gelfand pairs and multiplicity-free induced representations of finite groups*, Texas A& M University, November 9th, 2019.
- (151) *Expansive actions with specification of sofic groups, strong topological Markov property, and surjectivity*, University of Illinois at Urbana Champaign (IL), February 7, 2020.
- (152) *Linear subshifts and dynamics of linear cellular automata* (on-line), Shanghai Jiao Tong University, Shanghai, China, November 29, 2020.
- (153) *Endomorphisms of linear subshifts* (on-line), Expanding Dynamics VII, Creative Online Ventures in Dynamics, December 8, 2020.
- (154) *Linear cellular automata, linear subshifts, and group rings* (on-line), New York Group Theory Seminar, March 24, 2021.

### Part VIII-3: Scientific PUBLICATIONS:

#### Research articles:

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- [4] T. Ceccherini: *Approximately inner and centrally free commuting squares of type  $II_1$  factors and their classification*, J. Funct. Analysis **142** (1996) 296-336.
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- [6] L. Bartholdi, S. Cantat, T. Ceccherini–Silberstein and P. de la Harpe: *Estimates for simple random walks on fundamental groups of surfaces*, Coll. Math. **72** (1997), 173-194.
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**Editor:**

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Roma, 27 luglio 2021

Tullio Ceccherini-Silberstein