

### Contact Information

- Marco Lenzi, Dipartimento di Matematica, Università di Bologna, Piazza di Porta San Donato 5, 40126 Bologna, Italy.
- Tel.: (+39) 051 20 94479. Fax: (+39) 051 20 94490.
- E-mail: lenzi@dm.unibo.it. Web page: www.dm.unibo.it/~lenzi.

### EMPLOYMENT AND EDUCATION HISTORY

#### Current Employment

- Oct 2006 - : Associate Professor of Mathematical Physics, Università di Bologna.

#### Past Employment

- Sep 2006 - Aug 2007: Associate Professor of Mathematics, Stevens Institute of Technology.
- Summer 2006: Tenure at Stevens Institute of Technology.
- Sep 2001 - May 2006: Assistant Professor of Mathematics, Stevens Institute of Technology.
- Sep 1999 - Aug 2001: Postdoctoral Associate / Lecturer, Institute for Mathematical Sciences, State University of New York at Stony Brook.

#### Graduate Education

- Aug 27, 1999: Ph.D. in Mathematics, Rutgers University. Advisor: J. L. Lebowitz. Dissertation title: “Classical billiards and quantum large deviations”.
- Jun 4, 1998: Ph.D. in Mathematics (concentration Mathematical Physics), Università di Bologna. Advisor: S. Graffi. External advisor: Ya. G. Sinai. Dissertation title: “Caos quantistico cinematico” (Kinematic Quantum Chaos).
- Jan 1995 - Feb 1997: Visiting Fellow, Department of Mathematics, Princeton University. Supervisor: Ya. G. Sinai.

#### Undergraduate Education

- Jul 23, 1993: Laurea in Physics (Summa Cum Laude), Università di Bologna. Advisor: S. Graffi. Dissertation title: “Sulla nozione di ergodicità quantistica” (On the notion of quantum ergodicity).

#### Other Qualifications

- Feb 2001: Qualified as *maître de conférences*, Ministère de l'éducation nationale, France.

### RESEARCH

#### Scientific Interests

- Dynamical systems, ergodic theory, probability theory, statistical mechanics, quantum mechanics, quantum chaos, semiclassical analysis.

#### Current Grants

- 2010: Università di Bologna: RFO Research Group, Coordinator
- 2009-2011, Ministry of University and Research, Italy: PRIN Research unit on “Information dynamics in complex data structures”, Vice-coordinator of the Bologna Section
- 2009: Università di Bologna: RFO Research Group, Coordinator

#### Past Grants and Awards

- 2006-2008, Ministry of University and Research, Italy: PRIN Research unit on “Dynamical systems: classical, quantum, stochastic”, Member of the Bologna Section.
- Summer 2004 - Summer 2007: NSF Grant DMS-0405439, “Non-compact, random billiard systems; Quantum large deviations”, Principal Investigator and sole recipient.
- 2004-2006: COFIN-MIUR (Italy) Research unit on “Dynamical systems: classical, quantum, stochastic”, Member of the Bologna Section.
- 2002-2004: COFIN-MIUR (Italy) Research unit on “Dynamical systems: classical, quantum, stochastic”, Member of the Bologna Section.

- 2000-2002: COFIN–MIUR (Italy) Research unit on “*Dynamical systems: classical, quantum, stochastic*”, Member of the Bologna Section.
- 1998-2000: COFIN–MIUR (Italy) Research unit on “*Dynamical systems: classical, quantum, stochastic*”, Member of the Bologna Section.
- 1993-2000: Various travel grants (NSF, HCM Program (E.U.), CNR (Italy)).

#### Selected Meetings and Conferences (last 5 years)

- Jun 21-23, 2010; Parma, Italy: XV National Conference of Statistical Physics and Complex Systems (talk).
- May 31 - June 4, 2010, Corinaldo, Italy: INdAM Meeting “Hyperbolic Dynamical Systems in the Sciences” (organized).
- Oct 1-3, 2009; Montecatini Terme, Italy: 2009 National Meeting of the G.N.F.M. (Italian National Group of Mathematical Physics) (talk).
- Jun 8-12, 2009; Corinaldo, Italy: “First Meeting of the (Mostly) Young Italian Hyperbolicians” (organized and gave talk).
- Aug 27-30, 2008; Bologna: “Meccanica: A conference on honor of Sandro Graffi on his 65<sup>th</sup> birthday” (co-organized).
- Jun 4-19, 2008; Erwin Schrödinger Institute, Vienna: Semester on Hyperbolic Dynamical Systems (invited talk).
- Mar 10-14, 2008; Eurandom, Eindhoven: YEP (Young European Probabilists) Meeting 2008, “Statistical Mechanics on Random Structures” (invited talk).
- Feb 11-15, 2008; CIRM, Marseille: Workshop GREFI-MEFI 2008, “From dynamical systems to statistical mechanics” (invited lecture).
- Oct 11-13, 2007; Montecatini Terme, Italy: 2007 National Meeting of the G.N.F.M. (Italian National Group of Mathematical Physics) (invited lecture).
- Oct 5-7, 2006; Università di Modena e Reggio Emilia: Conference “Mathematical Methods and Problems in Quantum Mechanics” (talk).
- Aug 21-25, 2006; Alfréd Rényi Institute of Mathematics of the Hungarian Academy of Sciences, Budapest: Workshop “Randomness and Hyperbolicity in Dynamical Systems” (invited talk).
- Feb 12-15, 2006; Gold Coast, Australia: Conference “Statistical Systems Out of Equilibrium: Random Systems and Complex Fluids” (invited talk).

#### Research Visits and Invited Talks (last 5 years)

- Dec 5-9, 2010; Universität Erlangen-Nürnberg, Germany: Visit, invited by A. Knauf (colloquium).
- Jul 23 - Aug 12, 2010; Courant Institute, New York University: Visit, invited by L.S. Young (talk).
- Mar 4-7, 2010; University of Bristol, UK: Visit, invited by J. Marklof and C. Ulcigrai (talk).
- Nov 17-19, 2009; Università di Bari: Visit, invited by P. Facchi (talk).
- Jan 22, 2009; Università di Camerino: Invited talk at the Seminar “Dynamical Systems and rest of the world”.
- Oct 20-26, 2008; Centre de Physique Theorique de Luminy, Marseille: Visit, invited by S. Vaienti.
- May 12-15, 2008; Centre de Physique Theorique de Luminy, Marseille: Visit, invited by S. Vaienti (talk).
- Mar 18, 2008; Università di Pisa: Invited talk at the Mathematical Physics Seminar.
- Dec 12-16, 2007; Max-Planck-Institut für Physik komplexer Systeme, Dresden: Visit, invited by H. Kantz (talk).
- Apr 16-19, 2007; Eurandom, Eindhoven: Visit, invited by C. Giardinà (talk).
- Feb 1, 2007; Courant Institute, New York University: Invited talk at the Dynamical Systems Seminar.
- Dec 8, 2006; CUNY Graduate Center, New York: Invited talk at the Complex Analysis and Dynamics Seminar.
- Jun - Jul 2006; Courant Institute, New York University: Three invited talks at the Dynamical Systems Seminar.

#### Talks at Home Institutions (last 5 years)

- Feb 23, 2009; Bologna: Talk in the Mathematical Physics Seminar.
- Oct 23, 2006; Bologna: Talk in the Mathematical Physics Seminar.
- May 2006; Stevens: Colloquium of the Physics Department.
- Apr 20-21, 2006; Stevens: Workshop in Mathematical Physics, talk.

#### Refereeing

- Reviewed grant proposals for NSF (U.S.A.) and governmental agencies in Europe.

- Refereed for Communications in Mathematical Physics, Journal of the American Mathematical Society, Duke Mathematical Journal, Probability Theory and Related Fields, Nonlinearity, Journal of Mathematical Physics, Letters in Mathematical Physics, Journal of Statistical Physics, SIAM Journal on Applied Dynamical Systems, and several other journals and proceedings volumes.
- Reviewer for Mathematical Reviews (MathSciNet).

#### TEACHING AND ADVISING

##### **Courses taught (as main lecturer)**

- *Fall 2006 - ; Bologna:*
  - *A.Y. 2010/11:* 34692, Fisica Matematica Applicata (*Applied Mathematical Physics*).
  - *Fall 2010:* 28360, Fisica Matematica 1 (*Mathematical Physics 1 for mathematics students*).
  - *Spring 2010:* 16954, Matematica 2 (*Mathematics 2 for chemistry students*).
  - *A.Y. 2009/10:* 34692, Fisica Matematica Applicata (*Applied Mathematical Physics*).
  - *Spring 2009:* 16954, Matematica 2 (*Mathematics 2 for chemistry students*); 46148, Metodi e modelli matematici nelle scienze (*A topic course on dynamical systems for mathematics undergraduates*); Corso di dottorato: Sistemi Dinamici (*Dynamical systems for Ph.D. students*).
  - *Fall 2008:* 04788, Fondamenti di Matematica (*Elementary Mathematics for biology students*).
  - *Spring 2008:* 15578, Matematica II (*Mathematics II for chemistry students*).
  - *Fall 2007:* 04788, Fondamenti di Matematica (*Elementary Mathematics for biology students*).
  - *A.Y. 2006/07:* 21734, Seminario di Inglese (*Math Seminars in English*).
  - *Spring 2007:* 15578, Matematica II (*Mathematics II for chemistry students*); Corso di dottorato: Sistemi hamiltoniani integrabili (*Integrable Hamiltonian systems for Ph.D. students*).
  - *Fall 2006:* 04788, Fondamenti di Matematica (*Elementary Mathematics for biology students*).
- *Fall 2001 - Spring 2006; Stevens:*
  - *Spring 2006:* MA 281, Honors Mathematical Analysis III.
  - *Fall 2005:* MA 625, Fundamentals of Geometry; MA 182, Honors Mathematical Analysis II.
  - *Spring 2005:* MA 681, Function of a Complex Variable I.
  - *Fall 2004:* MA 611, Probability; MA 115, Mathematical Analysis I.
  - *Spring 2004:* MA 682, Function of a Complex Variable II; MA 116, Mathematical Analysis II.
  - *Fall 2003:* MA 681, Function of a Complex Variable I; MA 115, Mathematical Analysis I.
  - *Spring 2003:* MA 691, Dynamical Systems I; MA 116, Mathematical Analysis II.
  - *Fall 2002:* MA 552, Axiomatic Linear Algebra.
  - *Spring 2002:* MA 505, Introduction to Mathematical Methods.
  - *Fall 2001:* MA 115, Mathematical Analysis I; MA 116, Mathematical Analysis II.
- *Fall 1999 - Spring 2001; SUNY at Stony Brook:*
  - *Spring 2001:* MAT 649, Topics in Mathematical Physics: Rigorous Quantum Mechanics.
  - *Spring 2000:* MAT 211, Introduction to Linear Algebra; MAT 402, Probability and Measure Theory.
  - *Fall 1999:* MAT 331, Mathematical Problem Solving with Computers.

##### **Ph.D. students**

- *Spring 2009:* Luca Bussolari, Stevens Institute of Technology.

#### SERVICE

##### **Organization of meetings and conferences**

- *May 31 - June 4, 2010, Corinaldo (AN), Italy:* INdAM Meeting “Hyperbolic Dynamical Systems in the Sciences”, chair of the Organizing Committee.
- *June 8-12, 2009, Corinaldo (AN), Italy:* “First Meeting of the (Mostly) Young Italian Hyperbolicians: A workshop in hyperbolic dynamics”, organizer.
- *Aug 27-30, 2008; Bologna:* “Meccanica: A conference in honor of Sandro Graffi on his 65<sup>th</sup> birthday”, co-organizer

##### **Organization of seminars and colloquia**

- *Fall 2006 - Summer 2010; Bologna:* Host of the Mathematical Physics Seminar, Department of Mathematics.
- *Fall 2004 - Spring 2006; Stevens:* Host of the Nonlinear Systems Seminar, Department of Mathematics.

- *Fall 2001 - Fall 2003; Stevens:* In charge of the Colloquium of the School of Sciences and Arts.
- *Fall 2001 - Spring 2004; Stevens:* Cohost of the Nonlinear Systems Seminar, Department of Mathematics.

#### **Academic appointments**

- *Fall 2006 - ; Bologna:* Member of several evaluation committees (postdoctoral positions, admission to Ph.D. Program in Mathematics, etc.).
- *Fall 2005 - Spring 2006; Stevens:* Member of the Graduate Committee, Department of Mathematics.
- *Fall 2003 - Spring 2006; Stevens:* Freshmen Advisor, Department of Mathematics.
- *Fall 2004 - Spring 2005; Stevens:* Member of the Undergraduate Curriculum Committee, Department of Mathematics.
- *Spring 2002 - Spring 2003; Stevens:* Director of the Ph.D. Program in Mathematics.

#### **Other appointments**

- *Spring 2007 - Spring 2008 and Fall 2010 -; Bologna:* Secretary of the “Consiglio di Corso di Laurea” (*Undergraduate Committee*) in Mathematics.
- *Spring 2008 -; Bologna:* Member of the Library Committee
- *Spring 2006; Stevens:* Member of the Health Insurance Advisory Committee.

#### MISCELLANEOUS

#### **Association Memberships**

- G.N.F.M. (Italian National Group of Mathematical Physics).

## MARCO LENCI: PUBLICATIONS

- *Recurrence and higher ergodic properties for quenched random Lorentz tubes in dimension bigger than two* (with M. Seri, M. Degli Esposti and G. Cristadoro), preprint (2010), [arXiv:1011.6414v1](https://arxiv.org/abs/1011.6414v1).
- *Recurrence for quenched random Lorentz tubes* (with G. Cristadoro and M. Seri), *Chaos* **20** (2010), 023115.
- *On infinite-volume mixing*, *Comm. Math. Phys.* **298** (2010), no. 2, 485–514.
- *Central Limit Theorem and recurrence for random walks in bistochastic random environments*, *J. Math. Phys.* **49** (2008), 125213.
- *Hyperbolic billiards with nearly flat focusing boundaries. I* (with L. Bussolari), *Physica D* **237** (2008), no. 18, 2272–2281.
- *Recurrence for persistent random walks in two dimensions*, *Stoch. Dyn.* **7** (2007), no. 1, 53–74.
- *Typicality of recurrence for Lorentz gases*, *Ergodic Theory Dynam. Systems* **26** (2006), no. 3, 799–820.
- *Large deviations for quantum lattices: one-phase region* (with L. Rey-Bellet), *J. Stat. Phys.* **119** (2005), no. 3-4, 715–746.
- *Localization in infinite billiards: a comparison between quantum and classical ergodicity* (with S. Graffi), *J. Statist. Phys.* **116** (2004), no. 1-4, 821–830.
- *Aperiodic Lorentz gas: recurrence and ergodicity*, *Ergodic Theory Dynam. Systems* **23** (2003), no. 3, 869–883.
- *Semi-dispersing billiards with an infinite cusp. II*, *Chaos* **13** (2003), no. 1, 105–111.
- *Semi-dispersing billiards with an infinite cusp. I*, *Comm. Math. Phys.* **230** (2002), no. 1, 133–180.
- *Escape orbits and ergodicity in infinite step billiards* (with M. Degli Esposti and G. Del Magno), *Nonlinearity* **13** (2000), no. 4, 1275–1292.
- *Large deviations for ideal quantum systems* (with J. L. Lebowitz and H. Spohn), *Jour. Math. Phys.* **41** (2000), no. 3, 1224–1243.
- *Classical billiards and quantum large deviations*, Ph.D. Thesis, Rutgers University, 1999.
- *Caos quantistico cinematico (Kinematic quantum chaos)*, Ph.D. Thesis, Università di Bologna, 1998.
- *An infinite step billiard* (with M. Degli Esposti and G. Del Magno), *Nonlinearity* **11** (1998), no. 4, 991–1013.
- *Ergodic properties of the quantum ideal gas in the Maxwell-Boltzmann statistics*, *Jour. Math. Phys.* **37** (1996), no. 10, 5136–5157.
- *Escape orbits for non-compact flat billiards*, *Chaos* **6** (1996), no. 3, 428–431.