

Laura Giambruno

Curriculum Vitae

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Education

- 2004–2007 **Ph.D. in Computer Science and Mathematics**, *Università di Palermo*, Italy,
Title of the thesis: Automata-theoretic methods in free monoids and free groups.
Supervisor: Antonio Restivo..
- 1998–2002 **Degree in Mathematics**, *Università di Palermo*, Italy, *Title of the thesis:* Varietà di Codici (Variety of Codes). *Mark:* 110/110 cum laude et mention at *Premio Gugino*. *Supervisor:* Antonio Restivo..

Academic Positions

- 2012–2013 **Post-doc Researcher**, *Université de Caen*, France, 6 mo.
Research: Algorithms on words: worst and average cases analysis
- 2012–2013 **Adjunct assistant professor**, *Engineering school ENSICAEN*, France, 7 mo.
Research: Information theory: methods for bidirectional decoding.
- 2011–2012 **Adjunct assistant professor**, *Université Paris 13*, France.
Research: Algorithms on regular expressions: worst and average cases analysis - Information theory: methods of optimal parsing in lossless data compression by dictionaries.
- 2011 **Post-doc Researcher**, *Université Paris 13*, France, 3 months.
Research: Algorithms on regular expressions.
- 2007–2011 **Post-doc Researcher**, *Università di Palermo*, Italy.
Research: Complexity of regular languages and algorithms on strings.
- 2010 **Qualified to apply for Assistant Professor positions**, *national administrative examination*, Section 27: Informatique, France.

Research Visits

- 2007-2009 **Research visits**, *Université Paris-Est de Marne-la-Vallée*, France, 6 weeks.
Research: Average studies on the complexity of certain classes of regular languages.
- 2007 **Research visit**, *Université Paris-Est de Marne-la-Vallée*, France, 3 mo.
Research: Average studies on the complexity of certain classes of regular languages - Efficient algorithms for representing dictionaries.
- 2005–2006 **Research visit**, *Université de Bordeaux 1*, France, 9 mo.
Research: Automata-theoretic methods in free groups.
- 2003 **Research visit**, *University of São Paolo*, Brasil, 2 mo.
Research: Variety of Codes: codes with constraints.

Academic Teaching

| Year | Establishment | Level | Name | Num. of hours |
|-------|----------------|---|--|--|
| 12/13 | ENSICAEN | 1A INFO | Conception de sites Web Java et programmation objet Base de Données Soutien Algorithmique | 15h laboratory 24h laboratory 20h laboratory 40h laboratory |
| 12/13 | ENSICAEN | 1A ELEC | Algorithmique | 28 laboratory |
| 12/13 | ENSICAEN | 1A MC | Informatique | 24h laboratory |
| 11/12 | Univ. Paris 13 | L1 L1 INFO | Éléments d'Informatique Algorithmique structures linéaires | 66 laboratory 30h laboratory |
| 10/11 | Univ. Palerme | 2 ^o 3 ^o year Info | Linguaggi di Programmazione (Java) | 48h lecture |
| 09/10 | Univ. Palerme | 1 ^o year Math | Programmazione e laboratorio 2 (C) | 24h lecture |
| 08/09 | Univ. Palerme | 1 ^o year Math | Programmazione e laboratorio 2 (Delphi) Programmazione e laboratorio 1 (Delphi) | 16h lecture 16h lab 16h TP |

Research interests

- Automata and formal languages theory.
- Design and analysis of algorithms.
- Algorithms on words.
- Theory of variable length codes.
- Enumerative and analytic combinatorics.
- Lossless Data Compression

Publications

Revue

1. *Dictionary-Symbolwise Flexible Parsing*. Maxime Crochemore, Laura Giambruno, Alessio Langiu, Filippo Mignosi and Antonio Restivo. *Journal of Discrete Algorithms*. Vol. 14, pp. 74-90, July 2012. Available on line <http://dx.doi.org/10.1016/j.jda.2011.12.021>
2. *On-line construction of a small automaton for a finite set of words*. Maxime Crochemore, Laura Giambruno and Alessio Langiu. *Journal of Foundations of Computer Science*. Vol. 23, Issue 2, pp. 281-301, March 2012.
3. *On the size of transducers for bidirectional decoding of prefix codes*. Laura Giambruno and Sabrina Mantaci. *Rairo-Theoretical Informatics and Applications*. Vol. 46, pp. 315-328, 2011. Cambridge University Press. DOI:10.1051/ita/2012006 .
4. *Bideterministic transducers for bidirectional decoding of prefix codes*. Laura Giambruno and Sabrina Mantaci. *Theoretical Computer Science*. Vol. 411, pp. 1785-1792, March 2010.
5. *The average state complexity of rational operations on finite languages is linear*. Frédérique Bassino, Laura Giambruno and Cyril Nicaud. *Journal of Foundations of Computer Science*. Vol. 21, Issue 4, pp. 495-516, 2010.

6. *An automata-theoretic approach to the study of the intersection of two submonoids of a free monoid*. Laura Giambruno and Antonio Restivo. *Rairo-Theoretical informatics and applications* (on line). Vol. 42, pp. 503-524, 2008.

Proceedings

1. *On the number of prefix and border tables*. Julien Clément and Laura Giambruno. On the number of prefix and border tables. LATIN 2014 (Latin American Theoretical INformatics) , Montevideo, Uruguay. Lecture Notes in Computer Science. Volume 8392. 2014.
2. *A generalization of Girod's bidirectional decoding method to codes with a finite deciphering delay*. Laura Giambruno, Sabrina Mantaci, Jean Néraud and Carla Selmi. 16th International Conference on Developments in Language Theory (DLT 2012) , Taipei, Taiwan. Lecture Notes in Computer Science. Volume 7410, pp. 471-476, Springer-Verlag. August 2012.
3. *State complexities of transducers for bidirectional decoding of prefix codes*. Laura Giambruno and Sabrina Mantaci. 12st Italian Conference on Theoretical Computer Science (ICTCS 2010). Camerino, Italy. September 15-17, 2010. In electronic proceedings.
4. *State complexities of transducers for bidirectional decoding of prefix codes*. Laura Giambruno and Sabrina Mantaci. 13iemes Journées Montoises d'Informatique Théorique 2010 (JM'10). Amiens, France. September 6-10, 2010. In proceedings.
5. Maxime Crochemore, Laura Giambruno, Alessio Langiu, Filippo Mignosi and Antonio Restivo. *Dictionary-Symbolwise Flexible Parsing*. 21st International Workshop on Combinatorial Algorithms (IWOCA 2010). London, UK. Lecture Notes in Computer Science. Volume 6460, pp. 390-403, Springer-Verlag. 2011.
6. F. Bassino, Laura Giambruno and Cyril Nicaud. *Complexity of operations on cofinite languages*. 9th Latin American Theoretical Informatics Symposium (LATIN'10). Oaxaca, Mexico. Lecture Notes in Computer Science. Volume 6034, pp. 222-233, Springer-Verlag. 2010.
7. Maxime Crochemore and Laura Giambruno. *On-line construction of a small automaton for a finite set of words*. The Prague Stringology Conference 2009 (PSC 2009). pp. 15-28. 2009.
8. Frédérique Bassino, Laura Giambruno and Cyril Nicaud. *The average state complexity of the star of a finite set of words is linear*. In, Masami Ito, Masafumi Toyama, editors, International Conference on Developments in Language Theory (DLT '08). Kyoto, Japan. Lecture Notes in Computer Science. Volume 5257, pp.134-145. 2008.
9. Laura Giambruno and Antonio Restivo. *An automata-theoretic approach to the study of the intersection of two submonoids of a free monoid*. Mons Days of Theoretical Computer Science (JM '06). 2006. In proceedings.

Submitted

1. *Representing prefix and border tables: results on enumeration*. Julien Clément and Laura Giambruno. *Mathematical Structures in Computer Science* Submitted. February 2014.
2. *A generalization of Girod's bidirectional decoding method to codes with a finite deciphering delay*. Laura Giambruno, Sabrina Mantaci, Jean Néraud and Carla Selmi. *International Journal of Foundations of Computer Science*. Submitted. December 2013.

Planning and Organizing skills

- *Organization of conferences*: CPM 2011, Stringmasters 2011, Authomata 2007, DLT 2005.
- *Participation in research projects*: Prin (Italian), Authomata (European), ANR Magnum (French).

Communication skills

- *Contributed talks in international conferences:* DLT 2012, LATIN 2010, IWOCA 2010, ICTCS 2013 2010, JM 2010 2006, PSC 2009, DLT 2008.
- *Invited seminars:* in computer science groups in French and Italian Universities.

Refereeing and Reviewing

Revues ISIT, RAIRO-Theoretical Informatics and Applications, Annalae Mathematicae, Theoretical Computer Science, Journal of discrete algorithms
Conferences CPM 2011, LATA 2010

Computer skills

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|--------------------------|------------------------------------|-------------------------|---|
| <i>Operating Systems</i> | Windows, Linux, Mac OSX | <i>Microsoft Office</i> | Word, Excel, PowerPoint, Front-page |
| <i>Programming</i> | C, Java, SQL, Delphi, Lisp, Python | <i>Web Page Design</i> | HTML, CSS, Javascript, PHP, Dreamweaver |

Languages

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|---------|---------------|------------|-------|
| Italian | Mother tongue | Spanish | Basic |
| English | Fluent | Portuguese | Basic |
| French | Fluent | | |