

# Annamaria IEZZI

## Curriculum Vitae et Studiorum

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### Research interests

Algebraic geometry over finite fields (algebraic curves, number of rational points, zeta function, function fields, etc.), number theory, cryptography (isogeny-based cryptography, post-quantum cryptography), coding theory.

### Employment

- 08/17 – present **Postdoctoral Scholar Researcher** - *Department of Mathematics & Statistics, University of South Florida, Tampa.*  
Supervisor: Jean-François Biasse.
- 09/15 – 08/17 **ATER 100% (Attachée Temporaire d'Enseignement et de Recherche) ~ Visiting assistant professor** - *Institut de Mathématiques de Marseille (I2M), Aix-Marseille Université, Marseille.*
- 10/13 – 09/15 **Monitorat ~ Teaching assistant** - *Institut de Mathématiques de Marseille (I2M), Aix-Marseille Université, Marseille.*

### Education

- 02/2017 **French Qualification** to become a Maître de Conférences in section CNU 25 (Mathematics).
- 11/12 – 07/16 **Ph.D. in Mathematics**, Aix-Marseille Université (*grant of LabEx Archimède*).  
Title of the thesis: *Number of rational points on singular curves over finite fields.*  
Supervisor: Yves Aubry.
- 09/10 – 07/12 **M.S. cum laude in Mathematics**, Università degli Studi di Roma Tre, Rome.  
Title of the master's thesis: *Almost Dedekind domains.*  
Supervisor: Stefania Gabelli.
- 09/11 – 01/12 **Five-months Erasmus Exchange Program**, Université d'Aix-Marseille II, Marseille, within the master *Mathématiques Discrètes et Fondements de l'Informatique*.
- 09/07 – 07/10 **B.S. cum laude in Mathematics**, Università degli Studi di Roma Tre, Roma.

### Publications

#### Research

- [4] X.-d. Hou, [A. Iezzi](#) - *An application of the Hasse-Weil bound to rational functions over finite fields*, accepted to Acta Arithmetica.
- [3] J.-F. Biasse, [A. Iezzi](#), M. Jacobson Jr. - *A note on the security of CSIDH*, Progress in Cryptology - INDOCRYPT 2018, Proceedings, Security and Cryptology, vol. 11356, Springer, pp. 153-168, (2018), [https://doi.org/10.1007/978-3-030-05378-9\\_9](https://doi.org/10.1007/978-3-030-05378-9_9).
- [2] Y. Aubry, [A. Iezzi](#) - *Optimal and maximal singular curves*, Contemporary Mathematics, 686, Amer. Math. Soc., pp. 31-43, (2017), <https://doi.org/10.1090/conm/686>.

- [1] Y. Aubry, A. Iezzi - *On the maximal number of points on singular curves over finite fields*, Mosc. Math. J. 15 (2015), no. 4 pp. 615-627, <https://doi.org/10.17323/1609-4514-2015-15-4-615-627>.

## Outreach

- [1] E. Berardini, J. Cohen, G. Geoffroy, A. Iezzi: *Pi Day: An International Festival of Mathematics*. EMS Newsl. 3 (2018), 36-37, <https://doi.org/10.4171/NEWS/107/8>.

## Talks

### Research talks

- 06/12/2019 *An application of the Hasse-Weil bound to rational functions over finite fields*, Arithmetic, Geometry, Cryptography and Coding Theory (AGCT17), CIRM, Marseille, France.
- 06/07/2019 *An application of the Hasse-Weil bound to rational functions over finite fields*, Finite Fields and their Applications (Fq14), Vancouver, Canada.
- 2/09/2018 *Isogeny-based cryptography, a quantum-safe alternative*, Florida Women In Mathematics Day, Florida Atlantic University.
- 1/08/2018 *Un échange de clés dans le monde des calculateurs quantiques (A key exchange in the world of quantum computers)*, workshop ANR Manta, Paris, France.
- 12/11/2018 *A note on the security of CSIDH*, Indocrypt 2018, New Delhi, India.
- 11/19/2018 *On the security of a recent isogeny-based cryptosystem*, Discrete Mathematics Seminar, Department of Mathematics & Statistics, University of South Florida.
- 03/05/2018 *A singular trip through the world of algebraic curves over finite fields*, Discrete Mathematics Seminar, Department of Mathematics & Statistics, University of South Florida.
- 11/20/2016 *Curve su campi finiti a singolarità prescritte (Curves over finite fields with prescribed singularities)*, Seminar of Commutative Algebra, Dipartimento di Matematica e Fisica, Università degli studi di Roma Tre.
- 11/05/2015 *Courbes optimales et maximales (Optimal and maximal curves)*, Seminar of Arithmetic and Information Theory, I2M, Université d'Aix-Marseille.
- 05/18/2015 *Towards maximal singular curves over finite field*, Arithmetics, Geometry, Cryptography and Coding Theory (AGCT), CIRM, Marseille.
- 02/17/2015 *Sur le nombre maximum de points rationnels d'une courbe singulière sur un corps fini (On the maximal number of points on singular curves over finite fields)*, Seminar of Algebra at IMATH, Université de Toulon.
- 01/29/2015 *Sur le nombre maximum de points rationnels d'une courbe singulière sur un corps fini (On the maximal number of points on singular curves over finite fields)*, Seminar of Arithmetic and Information Theory, I2M, Université d'Aix-Marseille.
- 06/11/2014 *Singular curves over finite fields with many rational points*, Yet Another Conference on Cryptography (YACC), Porquerolles Island, France.
- 05/12/2014 *Singular curves over finite fields with many rational points*, Antalya Algebra Days XVI, Antalya, Turkey.
- 05/14/2013 *Courbes avec un nombre fixé de points rationnels (Curves with a prescribed number of rational points)*, Seminaire of Algebra at IMATH, Université de Toulon.

### Outreach talks

- 08/01/2019 *From a liar Guess who to error-correcting codes*, Young CryptographHers Cybercamp 2019, Florida Atlantic University, Boca Raton.
- 04/19/2019 *Guess who, if I can lie*, Math Club, University of South Florida.

- 01/22/2016 *Allô Papa Tango Charlie, théorie des codes correcteurs (Allô Papa Tango Charlie, theory of error-correcting codes)*, for a High School class, Marseille.
- 06/06/2014 *Les nombres premiers ne sont pas si aléatoires (Prime numbers are not so random)*, Journée d'étude sur le Hasard (*Thematic day on Randomness*), Fort St Jean, Marseille.
- 03/25/2014 *L'hypothèse de Riemann dans le paysage des courbes sur les corps finis (The Riemann Hypothesis in the landscape of curves over finite fields)*, Ph.D. student seminar, Marseille.
- 03/14/2014 *Pi... comme pizza (Pi... as pizza)*, Pi day 2014, Campus Saint-Charles, Marseille.

## Teaching experience

### UNIVERSITY OF SOUTH FLORIDA - UNITED STATES

#### Graduate courses:

- *Algebraic curves over finite fields* (Fall 2018).

#### Undergraduate courses:

- *MAC 2311 - Calculus 1* (Fall 2018, Spring 2018, Fall 2017).

### AIX-MARSEILLE UNIVERSITÉ - FRANCE

#### Undergraduate courses:

- *Linear algebra* (Spring 2017, Spring 2016).
- *Geometry and Arithmetic* (Fall 2016, Fall 2015).
- *Refresher course* in mathematics (Fall 2016, Fall 2015, Fall 2014).
- Recitations: *Geometry and Arithmetic* (Fall 2014), *Introduction to Analysis* (Fall 2014), *Linear algebra* (Spring 2014).

#### Engaging a broad body of students:

- *Stages Hippocampe* (three-day research initiation for high school students):
  - *Allô Papa Tango Charlie, théorie des codes correcteurs (Theory of error-correcting codes)* (supervisor).
  - *The Mathematics of Sudoku* (tutor).
  - *Théorie des noeuds (Knot theory)* (tutor).
  - *Les Mathématiques des jeux : comment gagner presque sûrement (The mathematics of games: how to win almost surely)* (tutor).

### UNIVERSITÀ DEGLI STUDI DI ROMA 3 - ITALY

#### Tutor for undergraduate courses:

- *General topology and elements of algebraic topology* (Spring 2011).
- *Euclidean and projective geometry* (Fall 2010, Fall 2009).
- *Theory of equation and Galois theory* (Spring 2010).

## Mathematical outreach activities

- Co-founder of the **Pi day association** that promotes and communicates mathematics to the general public. For all its original and creative actions, the association has been awarded the **d'Alembert Prize** in 2016 by the French Mathematical Society (Société Mathématique de France).

### Organization of outreach events

#### PI DAY

- 03/14,16,19/17 General chair of **Tournée de  $\pi$**  - 3.14 Paris (Théâtre des Variétés), 3.16 Marseille (Le Silo), 3.19 Lyon (Le Transbordeur) - 2000 people.  
*From Marseille to Vegas* (mathematical musical), three talks for the general public, booths, pie contest with prizes.  
**Videos:** <http://bit.ly/pi-day2017>
- 03/14/2016 Co-organizer of **Pi day 2016** - Théâtre National de la Criée, Marseille - 700 people.  
*Les  $\pi$  travaux d'Archimède* (mathematical musical), three talks for the general public, booths, pie contest with prizes.  
**Videos:** <http://bit.ly/pi-day2016>
- 03/14/2015 Co-organizer of **Pi day 2015** - MuCEM, Marseille - 500 people.  
*Mathematical day revolved around a morning-show with three talks to the general public, a pie contest with prizes and an afternoon of booths and fun animations.*

#### TREIZE MINUTES JEUNES CHERCHEURS (Thirteen minutes young researchers)

Night of multidisciplinary conferences of 13 minutes by young researchers, organized by a group of Ph.D students of Aix-Marseille Université.

**Videos:** <https://treize.lis-lab.fr/?cat=3>

- 04/26/2017 Co-organizer of **Treize Minutes Jeunes Chercheurs 2017** - Alcazar, Marseille - 300 people.
- 05/10/2016 Co-organizer of **Treize Minutes Jeunes Chercheurs 2016** - Alcazar, Marseille - 300 people.

### Booths, expositions and other activities

- 06/2019 Coordination of the curriculum development regarding coding theory for **CodebreakHERS**, a summer camp for young women in cybersecurity at University of South Florida.
- 02/2019 Carrer panelist at Florida Women in Mathematics Day.
- 10/2016 Guide for the booth *Tous les chemins mènent à Rome-Dragon (T3)* (*All roads lead to Rome-Dragon*), *Fête de la Science 2016*, Vieille Charité, Marseille.
- 05/2016 Guide for the *Exposition Imaginary*, Salon Culture et Jeux Mathématiques, Paris.
- 02/2016 Participation to the writing of the play *Les  $\pi$  travaux d'Archimède*, performed during *Pi day 2016*, at Théâtre National de la Criée in Marseille.
- 10/2015 Creation and animation of a booth on cryptography and coding theory: *Le charabia du numérique : mégapixels, gigaoctets, cryptage... et autres gros mots !*, *Fête de la Science 2015*, Villa Méditerranée, Marseille.

- 03/22/2015 Guide for the *Exposition Imaginary*, Vieux Port, Marseille.
- 03/14/2015 Creation and animation of the booth *Les Mathématiques nous transportent en... cuisine !* (*The Mathematics of cooking*), *Pi day 2015*, MuCEM, Marseille.

## Administrative Responsibilities

- 11/16-01/18 Secretary of the *Pi day* association.
- 03/14-08/17 Appointed member of I2M council (college of non-permanent researchers).
- 11/15-11/16 Treasurer of the *Pi day* association.

## Academic activities

- Reviewer for the journal *Finite Fields and Their Applications* and for *Mathematical Reviews*. Subreviewer for the conference *NutMiC2019*.
- Organizer of a welcome day for the academic years 2014/2015 and 2015/2016 of the *Mathematics and Computer Science Doctoral School* of Aix-Marseille Université.

## Computer skills

- Symbolic computation Magma, Sage, Wolfram Mathematica
- Programming C, Python
- Others html, css

## Language skills

- Italian (mother tongue), French (fluent), English (fluent), Spanish (fluent), Portuguese (intermediate).
- 2012-2017 Creator and coordinator of the project **Café des Langues Luminy** (in collaboration with the *Centre des Langues de Luminy* (CIELL) of Aix-Marseille Université and the *Erasmus Student Network (ESN) Marseille association*) and animator for the Italian language. The project has been awarded in 2016 the **Trophée Phocéén Étudiant** (prize for students initiatives) by the city of Marseille .

## Hobbies

Photography, cooking, piano, dance (jazz, contemporary, hip-hop, latin, rock&roll), tennis, friends,...