

ALLEGATO B

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[Nome e cognome] CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	CAROCIA
NOME	MARCO
DATA DI NASCITA	06/11/198

**INSERIRE IL PROPRIO CURRICULUM
(non eccedente le 30 pagine)**

Data

05/09/2020

Luogo

Firenze

Curriculum Vitae et Studiorum

Current employment

Dec. 2019 **Post Doc**, *Università degli studi di Roma Tor Vergata*, Research fellowship at Dipartimento di Matematica, Eccellenza 2018 - 2022.
Now

Previous employment

Dec. 2018 **Post Doc**, *Università degli studi di Firenze and SNS Pisa*, Research fellowship co-funded by Scuola Normale Superiore di Pisa and University of Florence.
Dec. 2019
Sept. 2017 **Post Doc**, *Universidade De Lisboa, Faculdade de Ciências - Centro de Matemática e Aplicações Fundamentais*, Campo Grande, Edifício C6, Piso 2, 1749-016 - Lisboa.
Sept. 2018
Sept. 2015 **Post Doc**, *Carnegie Mellon University, Center for Nonlinear Analysis*, 5000 Forbes Avenue, Pittsburgh (PA), 15213 - USA.
Sept. 2017

Education

2011-2015 **Ph.D.**, *Università degli studi di Pisa*, Pisa, I received my Ph.D after the dissertation in July 27, 2015.
Ph.D. in Analysis
Thesis *On the isoperimetric properties of Planar N -clusters*
Supervisor Prof. Giovanni Alberti and Prof. Francesco Maggi
Summary We have studied some questions involving the N -clusters in \mathbb{R}^n . An N -cluster is a family of N -disjoint sets of finite perimeter.

2009–2011 **Master**, *Università degli studi di Firenze*, Firenze, 110/110.
Applied Mathematics
Final work *Asymptotic inequalities for minimal planar clusters*
Supervisor Prof. Francesco Maggi
Summary Proof of the *Honeycomb Hexagonal Conjecture* and description of its consequence in the Cluster theory.

2006–2009 **Bachelor**, *Università degli studi di Firenze*, Firenze, 110/110.
General Curriculum, pure Mathematics
Final work *Block Cipher Algorithm and primitive group*
Supervisor Prof. Orazio Puglisi

Summary Discussion of some algebraic results involving the security of the DES-AES cipher algorithms: Data Encryption Standard and Advanced Encryption Standard (US federal standard cipher algorithms adopted by the *National Security Agency* in 2009). Explanation of a “differential crypt-analysis algorithm ” testing the security of the DES code. Some consideration about the security of the AES code.

2001–2006 **General certificate of Secondary Education**, *Technical Institute -A. Meucci-*, Firenze, 100/100.

Electronics and telecommunications industry expert foreman

List of publications

- 2020 *Contact surface of Cheeger sets.*
Caroccia - Ciani, Preprint arXiv:2005.06439 (2020), (Submitted to JMPA).
- 2019 *On the Gamma convergence of functionals defined over pairs of measures and energy-measures.*
Caroccia - Cristoferi, Journal of Nonlinear Science (2020).
<https://doi.org/10.1007/s00332-020-09623-y>.
- 2019 *On the integral representation of variational functionals on BD.*
Caroccia - Focardi - Van Goethem, (Accepted paper SIMA - In press) Preprint arXiv preprint arXiv:1907.11478 (2019).
- 2019 *Mumford – Shah functionals on graphs and their asymptotics.*
Caroccia - Chambolle - Slepčev, Nonlinearity, Volume 33, Number 8 - doi: 10.1088/1361-6544/ab81ee (2020)
- 2018 *Damage-driven fracture with low-order potentials: asymptotic behavior, existence and applications*
Caroccia - Van Goethem, ESAIM: M2AN, 53 4 (2019) 1305-1350, doi:10.1051/m2an/2019024
- 2017 *Equilibria configurations for epitaxial crystal growth with adatoms*
Caroccia - Cristoferi - Dietrich, Archive for Rational Mechanical Analysis (2018).
<https://doi.org/10.1007/s00205-018-1258-9>
- 2017 *The Cheeger N-problem in terms of BV functions*
Caroccia - Littig, Journal of Convex Analysis, Volume 26, Number 1 (2019).
- 2016 *On the isoperimetric properties of Planar N-clusters.*
Caroccia - Preprint arXiv:1601.07116
- 2015 *Cheeger N-clusters*
Caroccia - Calculus of variation and Partial Differential Equation (2017) 56: 30
doi:10.1007/s00526-017-1109-9
- 2014 *A sharp quantitative version of Hales’ isoperimetric honeycomb theorem*
Caroccia, Maggi - Journal de Mathematiques Pures et Appliquees, 106.5 (2016): 935-956
- 2014 *A note on the stability of the Cheeger constant of N-gons.*
Caroccia, Neumayer - Journal of Convex Analysis, Volume 22, Number 4, pgg. 1207-1213 (2015)

Seminars

- September 19, 2019 **Mini symposium Short talk**, *AGH UST*, Conference title "DEA: Dynamics, equation and Application", Krakow, Poland.
- June 13, 2019 **Seminar**, *Universidade de Lisboa*, Center of Mathematics, Fundamental Applications and Operations Research - CmafCIO, Lisbon, Portugal.
- Febr 06, 2019 **Conference Short talk**, *Levico Terme*, Bellavista Relax Hotel, Viale Vittorio Emanuele III 7, 38056 (Tn), Trento, Italy.
- October 24, 2018 **Seminar**, *University of Jyväskylä*, Department of Mathematics and Statistics, Jyväskylä, Finland.
- June 15, 2018 **Seminar**, *Università degli studi di Firenze*, Department of Mathematics and Statistics, Florence, Italy.
- May 20-25, 2018 **Conference speaker**, *Banff international research station, Alberta, Canada*, Conference title: "Topics in the Calculus of Variations: Recent Advances and New Trends".
- Apr 03, 2017 **Seminar**, *University of Jyväskylä*, Department of Mathematics and Statistics, Jyväskylä, Finland.
- Apr 15, 2016 **Seminar**, *University of Leiden*, Lorentz Center, Leiden, Netherlands.
- Jan 8, 2016 **Seminar**, *University of Cologne*, Mathematical Institute, Köln, Germany.
- Oct 27, 2015 **Seminar**, *Carnegie Mellon University*, Center for Non Linear Analysis, Pittsburgh (PA), USA.
- July 17, 2015 **Seminar**, *Max Planck Institute*, Max-Planck-Institute for mathematics in the sciences, Leipzig, Germany.
- May 20, 2015 **Seminar**, *Università degli studi di Modena*, Dipartimento di Scienze Fisiche, Informatiche, Matematiche, Modena, Italy.

Research experiences

XXIX National conference in Calculus of Variation

- Feb 04, 2019 **Conference**, *Levico Terme*, Bellavista Relax Hotel, Viale Vittorio Emanuele III 7, 38056 (Tn), Trento, Italy.
- Feb 08, 2019

Conference on calculus of variation organized by CIRM. I have had also the chance to give a short talk.

Emergence of Structures in Particle Systems: Mechanics, Analysis and Computation

- Oct 28, 2018 **Workshop**, *Oberwolfach, (GE)*, MFO, Oberwolfach Research Institute for Mathematics.
- Nov 2, 2018

Topics in the Calculus of Variations: Recent Advances and New Trends

- May 20, 2018 **Workshop**, *Alberta(Canada)*, Banff international research station, Alberta, Canada,
- May 25, 2018 Workshop on Calculus of variation held at the international research station in Banff. I have had also the honor to be a speaker.

Topics in Applied Analysis and Optimisation

- Dec 6, 2017 **Conference**, *Lisbon (PO)*, Centro de Matemática, Aplicações Fundamentais e Investigação Operacional, The event presented and discussed the main scientific interests among the research groups of the Weierstrass Institute in Berlin and mathematics centres in Portugal.
- Dec 8, 2017

A Mathematical Tribute to Ennio De Giorgi

Sep 19, 2016 **Conference**, *Pisa (IT)*, Centro di ricerca Ennio De Giorgi, Palazzo dei congressi, Via
Sep 23, 2016 Giacomo Matteotti 1, Pisa (Pi), On the occasion of the vigintennial of Ennio De Giorgi's
departure, the meeting gathers many generations of mathematicians and aims at the
presentation of the most recent advances in the many research fields marked by De
Giorgi's contributions.

[New Frontiers in Nonlinear Analysis for Materials](#)

Jun 2, 2016 **Summer school**, *Pittsburgh (PA)*, Center for Nonlinear Analysis, Carnegie Mellon
Jun 10, 2016 University, 5000 Forbes Avenue, Pittsburgh (PA), USA.
PIRE-CNA 2016 Summer school

[New challenge for the calculus of variation stemming for problems in the materials science and image processing](#)

May 16, 2016 **Workshop**, *Montréal, Quebec (CA)*, Centre de recherches mathématiques (CRM),
May 20, 2016 Université de Montréal, PO Box 6128, Station Centre-ville, Montréal.
Workshop in honor of the 60th birthday of Irene Fonseca

[Micro structure Evolution in Materials: Defects, Cracks & Interfaces](#)

Apr 11, 2016 **Workshop**, *Leiden (NE)*, University of Leiden, Lorentz center, 3rd Floor Oort Building,
Apr 15, 2016 Niels Bohrweg, Leiden (NE).
Workshop on materials science.

[Analysis of partial differential equations](#)

Dec 07, 2015 **Conference**, *Phoenix (AR)*, Double tree resort Hilton, Paradise Valley, Scottsdale,
Dec 10, 2015 Phoenix (AR), US.
SIAM Conference.

[Mathematics and Mechanics in the 22nd Century: Seven Decades and Counting](#)

Oct 23, 2016 **Workshop**, *Eugene (OR)*, Valley River Inn Hotel, Eugene (OR), US.
Oct 25, 2016 IMA Special Workshop in honor of the 90th birthday of Jerry Ericksen.)

[XXV National conference in Calculus of Variation](#)

Feb 02, 2015 **Conference**, *Levico Terme*, Bellavista Relax Hotel, Viale Vittorio Emanuele III 7,
Feb 06, 2015 38056 (Tn), Trento, Italy.
Conference on calculus of variation organized by CIRM.

[Fall Semester in Austin](#)

Aug 07, 2014 **Courses and research**, *UT Texas at Austin*, 2515 Speedway, 78712 Texas, (512)
Dec 18, 2014 471-7711, Austin, Texas (US).
I spent five months in Austin to work with my Ph.D thesis co-advisor Francesco Maggi. We
worked on some stability isoperimetric issues involving the hexagonal tiling in the plane. I also
attended the course: Geometric Measure Theory (Teacher Francesco Maggi).

[XXIV National conference in Calculus of Variation](#)

Jan 26, 2014 **Conference**, *Levico Terme*, Bellavista Relax Hotel, Viale Vittorio Emanuele III 7,
Jan 31, 2014 38056 (Tn), Trento, Italy.
Conference on calculus of variation organized by CIRM.

[School and workshop on "geometric measure theory and optimal transport"](#)

Jul 15, 2014 **School and workshop**, *ICTP*, Strada costiera 11, 3415 (Ts), Trieste, Italy.
 Aug 03, 2014 The main topics of the school were the optimal transport theory and the theory of currents. The mini course on "optimal transport theory" were taught by Alessio Figalli and Guido De Philippis. As far as the course "theory of currents" is concerned the teachers were Camillo De Lellis and Emanuele Spadaro. At the end of the school I attend a one-week conference on these fields.

[Convexit  cach e en  quations aux d riv es partielles non-lin aires](#)

May 14, 2013 **Lectures series**, *Universit  catholique de Louvain*, Institut de recherche en math matique et physique, Louvain La Neuve, Belgium.
 May 16, 2013 Course on optimal transport.

[XXIII National conference in Calculus of Variation](#)

Feb 3, 2013 **Conference**, *Levico Terme*, Bellavista Relax Hotel, Viale Vittorio Emanuele III 7,
 Feb 8, 2013 38056 (Tn), Trento, Italy.
 Conference on calculus of variation organized by CIRM.

[International Conference on Fluids And Variational Methods](#)

Jan 28, 2013 **Conference**, *University of Leipzig*, Felix-Klein-H rsaal, Room 501, Paulinum, Uni-
 Feb 1, 2013 versity of Leipzig, Universit tsstra e 1, 04109, Leipzig, Germany.
 Conference on variational methods in fluids dynamics.

[XXII National conference in Calculus of variation](#)

Feb 5, 2012 **Conference**, *Levico Terme*, Bellavista Relax Hotel, Viale Vittorio Emanuele III 7,
 Feb 10, 2012 38056 (Tn), Trento, Italy.
 Conference on calculus of variation organized by CIRM.

[Summer School](#)

Jul 31, 2011 **School**, *Universit  degli studi di Perugia*, Via Vanvitelli 1, 06123, Perugia, Italy.
 Sept 2, 2011 In August 2011 I attended the "SMI", (Scuola Matematica interuniversitaria) in Perugia. I attended two lectures in analysis named Partial Differential Equation (given by prof. Pagani, Carlo and Johnson, Russell) and Functional Analysis (given by prof. Milmann, Vitali and Eidelman, Yuli)

[International Modeling Week](#)

June 14, 2010 **School and workshop**, *Universidad Complutense de Madrid*, Plaza de Ciencias, 3 Ciudad Universitaria 28040, Madrid, Spain.
 June 22, 2010 In June 2010 I attended the "International Modeling Week" in Madrid offered by the Universidad Complutense de Madrid through a scholarship. The work, named "Calibration of single-factor HJM models of interest rates", was about a mathematical-economic model. Supervisors: Prof. Gerardo Oleaga (*UCM*), Miguel Carillon Alvarez (*Banco Santander*).

[Event organized](#)

[Topics in Nonlinear Analysis: Calculus of Variations and PDEs](#)

Oct 10, 2018 **Conference**, *Lisboa (PT)*, Faculdade de Ci ncias, Universidade de Lisboa, Conference
 Oct 12, 2018 on Calculus of Variation - <https://sites.google.com/view/cvpdelisboa/home>.

[Teaching experience](#)

[Escola de Ver o de Matem tica \(summer school in mathematics\)](#)

Jun 20, 2018 **Departamento de Matematica, Faculdade de Ciencias, Universidade de Lisboa,**
Jun 22, 2018 Lisbon, PT, Calculus of Variations: birth and rise of a new discipline.
Three hours class for master students
<https://ciencias.ulisboa.pt/pt/escola-de-verao-de-matematica>
[Principle of real analysis II - Spring 2017](#)

Jan 2017 **Carnegie Mellon University, Mellon College of Science, Pittsburgh (PA), US,**
May 2017 Principle of real Analysis II.
[Principle of real analysis I - Fall 2016](#)

Sep 2016 **Carnegie Mellon University, Mellon College of Science, Pittsburgh (PA), US,**
Dec 2016 Principle of real Analysis I.
[Principle of real analysis II - Spring 2016](#)

Jan 2016 **Carnegie Mellon University, Mellon College of Science, Pittsburgh (PA), US,**
May 2016 Principle of real Analysis II.
[Principle of real analysis I - Fall 2015](#)

Sep 2015 **Carnegie Mellon University, Mellon College of Science, Pittsburgh (PA), US,**
Dec 2015 Principle of real Analysis I.
[Analisi 1 - Fall 2013, Teaching Assistant](#)

Sep 2013 **Università degli studi di Pisa, Dipartimento di ingegneria civile, Pisa,**
Dec 2013 Analisi I.

Languages

English - (comparable to) C1 level
writing
English - (comparable to) C1 level
speaking
French - (comparable to) A1 level
writing
French - (comparable to) A2 level
speaking

Programming languages

C++ Sufficient
Mat lab Good
ASM Sufficient

September 5, 2020