

VITO CRISMALE

Curriculum Vitae

Part I - General Informations

Name Vito Crismale

Birthday 15/07/1988

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Part II - Education

- 10/12-09/16 **PhD in Applied Mathematics**, SISSA Trieste (Italy), **cum laude**
Thesis: *Some results on quasistatic evolution problems for unidirectional processes*
Supervisors: Prof. G. Dal Maso and Dr. G. Lazzaroni
Referees: Prof. A. Mielke (WIAS Berlin) and Prof. U. Stefanelli (University of Vienna)
- 10/10-05/12 **Master Degree in Mathematics**, Università degli Studi di Bari Aldo Moro, Bari, *Curriculum in Pure Mathematics*, **110/110 cum laude**
Thesis: *Metodi variazionali e soluzioni solitoniche per alcune equazioni di campo*
Supervisors: Prof. D. Fortunato and Prof. L. Pisani
Scientific field: *Nonlinear Analysis*
- Agosto 11 **Summer school - Perugia 2011**, Scuola Matematica Interuniversitaria (SMI), Functional Analysis (mark A/A), Differential Equations in Mathematical Physics (mark A/A)
- 10/07-07/10 **Bachelor Degree in Mathematics**, Università degli Studi di Bari Aldo Moro, Bari, *Curriculum in Pure Mathematics*, **110/110 cum laude**
Thesis: *Sull'intersezione completa insiemistica*
Supervisor: Prof. M. Barile
Scientific field: *Commutative Algebra*

Part III - Appointments

- 11/23-Today **Professore Associato**, Dipartimento di Matematica *Guido Castelnuovo*, Sapienza Università di Roma
- 11/20-10/23 **RTD B (Tenure Track Assistant Professor)**, Dipartimento di Matematica *Guido Castelnuovo*, Sapienza Università di Roma
- 10/18-10/20 **Standard European Fellow Marie Skłodowska-Curie** CMAP, École Polytechnique Palaiseau, Post-Doc
- 10/16-09/18 **Individual Fellowship FMJH, program *Mathématiques Ingénierie***, *Fondation Mathématique Jacques Hadamard*, CMAP, École Polytechnique Palaiseau, Post-Doc

10/12-09/16 **PhD fellowship**, SISSA Trieste, PhD Student

Part IV - Teaching experience

Courses at *Sapienza Università di Roma*:

09/24-01/25 *Istituzioni di Matematica*, I year Bachelor in Natural Sciences (40h)

09/24-01/25 *Analisi*, I year Bachelor in Physics (90h)

09/23-01/24 *Istituzioni di Matematica 1*, I year Bachelor in Chemistry (40h)

09/23-01/24 *Analisi*, I year Bachelor in Physics (90h)

09/22-01/23 *Analisi*, I year Bachelor in Physics (90h)

09/21-01/22 *Analisi*, I year Bachelor in Physics (90h)

03/21-06/21 *Istituzioni di Matematica 2*, I year Bachelor in Chemistry (60h)

11/20-01/21 *Calcolo e Biostatistica*, I year Bachelor in Biology (40h, with Dr. E. Agliari)

Courses in France:

03/19-04/19 Practical Exercises (TP), *Algorithmes d'Optimisation*, III year Bachelor in 'Mathématiques et Interactions, et Double Licence', Université Paris Sud / Paris Saclay, Orsay, France (14h)

09/18-01/19 *Équations Différentielles Ordinaires*, III year Bachelor in 'Mathematics et Interactions', Université Paris Sud / Paris Saclay, Orsay, France (52,5 h)

09/17-01/18 Theoretical Exercises (TD), *Mathématiques et Calcul*, I year Bachelor in 'Mathématiques et Informatique', Université Paris 5 Descartes (72h)

09-10/17 Theoretical Exercises (TD), *Linear Algebra and Optimisation*, I year Master Data Science for Business, École Polytechnique and HEC Paris (12h)

Part V - Awards and Honors

2023 Positive evaluation for Professorship - "Abilitazione Scientifica Nazionale a Professore di I Fascia", Settore concorsuale 01/A3, SSD MAT/05 (Analysis)

2021 **Junior Prize ISIMM 2020+21**—The International Society for the Interaction of Mechanics and Mathematics <https://isimm.net/history/>

2020 Positive evaluation for Professorship - "Abilitazione Scientifica Nazionale a Professore di II Fascia", Settore concorsuale 01/A3, SSD MAT/05 (Analysis)

2007-2010 **Fellowship for Bachelor Degree in Mathematics**, Istituto Nazionale di Alta Matematica "F. Severi" (INdAM)

2010 **Best graduated in Mathematics**, Università degli Studi di Bari Aldo Moro, Bari

2017 Positive evaluation for *Maître de Conférences*, Sections 25 e 26, Pure and Applied Maths
https://www.galaxie.enseignementsup-recherche.gouv.fr/ensup/qualification/Resultats_2017/MCF_qualifies_2017.pdf

Invited talks:

- 29/01/25 Workshop *Geometric Measure Theory in Trento*, Trento, <https://sites.google.com/view/gmt-trento/>
- 06/06/24 Workshop *Calculus of Variations and Nonlinear Analysis in the Applied Sciences*, Roma, <https://sites.google.com/uniroma1.it/cal-var-nonlin-an-appl-sci/home>
- 22/05/24 *International Conference on Elliptic and Parabolic Problems: GAETA 2024 - MS Variational free-discontinuity problems occurring in elasticity theory*, Gaeta <https://www.ljll.fr/gaeta2024/>
- 05/10/23 Workshop *Calculus of Variations and Free Boundary Problems VI*, Pisa, <http://www.velichkov.it/workshop-CVFBP-6.html>
- 25/08/23 *ICIAM 2023 Tokyo - MS Variational methods for singularities and concentration on low dimensional sets*, Waseda University Tokyo, Japan https://iciam2023.org/registered_data?id=00746#02113
- 09/02/23 Workshop *Variational Models in Materials Science*, Naples, <https://sites.google.com/view/variame23/home-page?authuser=0>
- 11/07/22 *SIAM Annual Meeting 2022 - MS Advances in Variational Methods and Applications to Materials and Machine Learning*, Pittsburgh, USA <https://www.siam.org/conferences/cm/conference/an22>
- 25/05/22 INdAM Workshop *PHAME2022- PHAse field MEthods in applied sciences*, Rome
<https://sites.google.com/view/phame2022/?pli=1>
- 18/05/22 CIRM Conference *Beyond Elasticity: Advances and Research Challenges*, CIRM-Luminy, France
<https://conferences.cirm-math.fr/2535.html>
- 09/05/22 XXXI Convegno Nazionale di Calcolo delle Variazioni, Levico Terme (TN)
<https://sites.google.com/unitn.it/cncdv2022>
- 25/06/21 8th European Congress of Mathematics, Portoroz, Slovenia - Mini Symposium 33
- 20/05/21 SIAM-MS21: *SIAM Conference on Mathematical Aspects of Materials Science* - Mini Symposium 21
- 19/11/19 Workshop *Recent Advances in Mechanics and Mathematics of Materials*, Roma
<https://sites.google.com/a/uniroma1.it/ram3/>
- 07/10/19 Journée de Rentrée du CMAP, École Polytechnique Palaiseau, Francia
<https://portail.polytechnique.edu/cmap/fr/journee-de-rentree-du-cmap-2019>
- 15/09/19 XXIV Congresso AIMETA-*Associazione Italiana di Meccanica Teorica e Applicata*, Roma - Mini Symposium 1
http://www.aimeta2019.it/wp-content/uploads/2019/09/Programma-AIMETA_definitivo.pdf
- 03/09/19 XV Congress COMPLAS-*Conference on Computational Plasticity*, Barcellona, Spagna - Invited section *Theory of Fracture, Crack propagation Criteria, and Crack Tracking Algorithms*, Organizzatori: Anna Pandolfi, Michael Ortiz
<https://congress.cimne.com/complas2019/frontal/default.asp>
- 03/03/19 Workshop *Phase-Field Models of Fracture*, BIRS, Banff, Canada
<https://www.birs.ca/events/2019/5-day-workshops/19w5207>

- 05/02/19 XXIX Convegno Nazionale di Calcolo delle Variazioni, Levico Terme (TN)
<http://www.science.unitn.it/cirm/programCDV2019.html>
- 03/09/18 *Meeting on Applied Mathematics and Calculus of Variations*, Università La Sapienza, Roma
<http://www1.mat.uniroma1.it/people/garroni/meeting2018.html>
- 21/03/18 GAMM 89th Annual Scientific Conference, Munich, Germany - Young Researchers' Mini Symposium
 YR5 *Variational Aspects of Multiscale Modelling in Materials Science*
<https://jahrestagung.gamm-ev.de/index.php/2018/2018-scientific-program/2018-yr-minisymposia>
- 05/09/17 XXIII Congresso AIMETA-*Associazione Italiana di Meccanica Teorica e Applicata*, Salerno - Mini
 Symposium 8
<http://www.aimeta2017.unisa.it/node/5#overlay-context=node/46>
- 14/02/17 *Miniworkshop on dislocations, plasticity, and fracture*, SISSA, Trieste
<https://www.math.sissa.it/workshop/miniworkshop-dislocations-plasticity-and-fracture>
- 21/07/16 7th European Congress of Mathematics, Berlin, Germany - Mini Symposium 16
<http://www.7ecm.de/program/schedule.html>
- 04/07/16 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando (FL),
 USA - Special Session 68 http://www.aimsconference.org/conferences/2016/2016_schedule.html
- 20/01/16 XXVI Convegno Nazionale di Calcolo delle Variazioni, Levico Terme (TN)
<http://www.science.unitn.it/cirm/programCDV2016.html>

Part VI - Funding

- 2025 Title: *Variational analysis of some models for materials with defects*
 Programma: INdAM-GNAMPA Project
 Importo: **3500 €**, Coordinator (8 participants)
- 2022-Today Title: *Variational methods for stationary and evolution problems with singularities and inter-
 faces*,
 Program: *PRIN 2022 Project*, Participant
- 2022-2024 Title: *Variational Approach to Defects at Rome 1*,
 Program: *Progetto SEED PNR Sapienza*
 Amount: **10000 €**, Principal Investigator (individual)
- 03/22-03/25 Title: *Analysis of some models in Materials Science with tools of Calculus of Variations and
 Geometric Measure Theory*,
 Program: *Sapienza University Projects 2021*,
 Amount: **14500 €**, Principal Investigator
- 2017-2022 Title: *Variational methods for stationary and evolution problems with singularities and inter-
 faces*,
 Program: *PRIN 2017 Project*, Participant

- 10/18-09/20 Title: **BriCoFra**, *New ideas for the Variational Approach to Brittle and Cohesive Fracture*,
 Program: *H2020-MSCA-IF-2017, Action MSCA-IF-EF-ST (Standard EF), Project n.793018*,
 Amount: **173076 €**, Principal Investigator (individual fellowship)
- 10/16-09/18 Title: *Evolutionary models for elastoplasticity coupled with damage*
 Program: Investissement d'avenir project, reference ANR-11-LABX-0056-LMH, LabEx LMH
 Amount: **70000 €**, Principal Investigator (individual fellowship)
- 2016 Title: *Multiscale analysis of complex systems with variational methods*
 Program: Progetto INdAM-GNAMPA 2016
 Amount: **3200 €**, Member (8 collaborators, coordinator Dr. G. Lazzaroni)

Part VII - Scientific Activities

Other Invited Talks

- 17/11/22 Università di Siena
- 27/10/20 Center for Nonlinear Analysis Seminar, Carnegie Mellon University, Pittsburgh (USA)
- 02/03/20 Séminaire d'Analyse non linéaire et EDP, Universités de Bruxelles et Louvain-la-Neuve, Belgium
- 13/11/19 Università di Trento
- 26/02/19 Séminaire Modélisation, Analyse et Calcul de l'Institut de Mathématiques de Toulouse, France
- 10/01/19 Università di Brescia
- 27/11/18 Università di Pavia
- 05/11/18 Università di Napoli
- 09/10/18 Séminaire de l'équipe ACSIOM, IMAG Montpellier, France
- 03/07/18 Congresso SIMAI, minisymposium 28, Roma
- 02/05/18 Seminario *Analysis and differential equations*, CMAF, Lisbona, Portugal
- 06/02/18 Séminaire de l'équipe EDP - IECL, Nancy, France
- 25/01/18 München-Augsburg Analysis Oberseminar - TUM, München, Germany
- 18/01/18 Séminaire de l'équipe Analyse Numérique et EDP - Université Paris Sud, Orsay, France
- 26/09/17 Università di Brescia
- 06/03/17 Università *La Sapienza*, Roma
- 30/01/17 Seminar for *GdT Calcul des Variations* - Université Paris-Dauphine, France
- 26/10/15 Analysis Junior Seminars, SISSA, Trieste
- 03/09/15 Mathematical Colloquium, Università di Bari

Organization of Meetings

- 2025 With Proff. A. Garroni, A. Malusa, Event *Vito Volterra Meeting 2025*, 16-20 June 2025, Roma
<https://sites.google.com/uniroma1.it/volterrameeting2025/>
- 2024 With Proff. A. Garroni, L. De Luca, A. Malusa, E. Spadaro, Event *Vito Volterra Meeting 2024*, 24-28 June 2024, Rome
<https://sites.google.com/uniroma1.it/volterrameeting2024/>
- 2023 With Proff. A. Garroni, A. Malusa, E. Spadaro, Event *Vito Volterra Meeting 2023*, 5-9 June 2023, Rome
<https://sites.google.com/uniroma1.it/volterrameeting2023>
- 2022 With Proff. A. Garroni, A. Malusa, E. Spadaro, Event *20 years of Summer Schools on CalcVar in Rome*, 13-17 June 2022, Rome
<https://sites.google.com/uniroma1.it/summerschool2022>
- 2021 With Proff. L. Freddi, G. Lazzaroni, and Dr. G. Orlando, 3 minisimposia at *Congresso Nazionale 2018 SIMAI-Società Italiana di Matematica Applicata e Industriale*, 30/08-03/09 2021, Parma
<http://www.simai.unipr.it/conference-program/1/>
- 2019 With Dr. F. Iurlano and Dr. G. Orlando, Workshop *Calculus of Variations and Applications in Trani*, 28-31 October 2019, Trani (BT)
<https://sites.google.com/view/cvatrani2019/>
- 2018 With Dr. G. Lazzaroni, 2 minisimposia at *Congresso Nazionale 2018 SIMAI-Società Italiana di Matematica Applicata e Industriale*, 02-06 July 2018, Rome
<https://ocs.simai.eu/index.php/SIMAIcongress/SIMAI2018>

Institutional appointments

- 2025 Member of commission for 2 years Assegno di Ricerca on Excellence Program of Maths Department
- 2024 Member of commission for a Postdoc position in PRIN Grant
- 2022/23 Member of Università Sapienza Research Commission
- 2021-25 Member of Maths Dept. Commission for preparation of Maths Olympic Games

Editorial Activity

- Referee for Arch. Rational Mech. Anal. (ARMA), Ann. Inst. H. Poincaré Anal. Non Linéaire (C), J. Funct. Anal., Calc. Var. Partial Diff. Equ. (CVPDE), SIAM Journal on Mathematical Analysis (SIMA), Math. Models Methods Appl. Sci. (M3AS), ESAIM COCV, Adv.Calc.Var., Zeit. Angew. Math. Mech. (ZAMM), Math. Modelling Numer. Anal. (M2AN), Math. Eng. (MinE), Math. Methods Appl. Sci. (M2AS)
- Reviewer for Mathematical Reviews/MathSciNet

Part VIII - Publications

- [1] V. Crismale, *Globally stable quasistatic evolution for a coupled elastoplastic–damage model*, **ESAIM Control Optim. Calc. Var.** **22**, 883-912 (2016),
- [2] V. Crismale, G. Lazzaroni, *Viscous approximation of quasistatic evolutions for a coupled elastoplastic–damage model*, **Calc. Var. Partial Differ. Equ.** **55 : Art. 17** (2016),

- [3] V. Crismale, *Globally stable quasistatic evolutions for strain gradient plasticity coupled with damage*, **Ann. Mat. Pura Appl.** **196**, 641-685 (2017),
- [4] V. Crismale, G. Lazzaroni, *Quasistatic crack growth based on viscous approximation: a model with branching and kinking*, **Nonl. Diff. Eqns. Appl. (NoDEA)** **24 : Art. 7** (2017),
- [5] V. Crismale, G. Lazzaroni, G. Orlando, *Cohesive fracture with irreversibility: quasistatic evolution for a model subject to fatigue*, **Math. Models Methods Appl. Sci. (M3AS)**, **28**, 1371-1412 (2018),
- [6] V. Crismale, G. Orlando, *A Reshetnyak-type lower semicontinuity result for linearised elasto-plasticity coupled with damage in $W^{1,n}$* , **Nonl. Diff. Eqns. Appl. (NoDEA)** **25 : Art. 16** (2018),
- [7] A. Chambolle, V. Crismale, *A density result in $GSBD^p$ with applications to the approximation of brittle fracture energies*, **Arch. Ration. Mech. Anal.** **232**, 1329-1378 (2019),
- [8] A. Chambolle, V. Crismale, *Compactness and lower semicontinuity in $GSBD$* , **J. Eur. Math. Soc. (JEMS)** **23**, 701-719 (2021),
- [9] V. Crismale, *On the approximation of SBD functions and some applications*, **SIAM J. Math. Anal.** **51**, 5011-5048 (2019),
- [10] R. Alessi, V. Crismale, G. Orlando, *Fatigue effects in elastic materials with variational damage models: A vanishing viscosity approach*, **J. Nonlinear Sci.** **29**, 1041-1094 (2019),
- [11] A. Chambolle, V. Crismale, *Phase-field approximation of some fracture energies*, **Adv. Calc. Var.** **14**, 475-498 (2021),
- [12] A. Chambolle, V. Crismale, *Existence of strong solutions to the Dirichlet problem for the Griffith energy*, **Calc. Var. Partial Differ. Equ.** **58: Art. 136** (2019),
- [13] V. Crismale, *Density in SBD and approximation of fracture energies*, **Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl.** **30**, 533-542 (2019),
- [14] V. Crismale, G. Orlando, *A lower semicontinuity result for linearised elasto-plasticity coupled with damage in $W^{1,\gamma}$, $\gamma > 1$* , **Mathematics in Engineering** **2**, 101-118 (2019),
- [15] V. Crismale, R. Rossi, *Balanced viscosity solutions to a rate-independent coupled elasto-plastic damage system*, **SIAM J. Math. Anal.** **53**, 3420-3492 (2021),
- [16] V. Crismale, M. Friedrich, *Equilibrium configurations for epitaxially strained films and material voids in three-dimensional linear elasticity*, **Arch. Ration. Mech. Anal.** **232**, 1041-1098 (2020),
- [17] J.-F. Babadjian, V. Crismale, *Dissipative boundary conditions and entropic solutions in dynamical perfect plasticity*, **J. Math. Pures Appl.** **148**, 75-127 (2021),
- [18] V. Crismale, G. Scilla, F. Solombrino, *A derivation of Griffith functionals from discrete finite-difference models*, **Calc. Var. Partial Differ. Equ.** **59: Art. 193** (2020),
- [19] V. Crismale, M. Friedrich, F. Solombrino, *Integral representation for energies in linear elasticity with surface discontinuities*, **Adv. Calc. Var.** **15**, 705-733 (2020),
- [20] V. Crismale, A. Chambolle, *Equilibrium configurations for nonhomogeneous linearly elastic materials with surface discontinuities*, **Ann. Sc. Norm. Super. Pisa Cl. Sci.** **24**, 1575-1610 (2023),
- [21] V. Crismale, L. De Luca, A. Kubin, A. Ninno, M. Ponsiglione, *The variational approach to s -fractional heat flows and the limit cases $s \rightarrow 0^+$ and $s \rightarrow 1^-$* , **Journal of Functional Analysis** **284**, Article 109851 (2023),

- [22] V. Crismale, *Energetic solutions for the coupling of associative plasticity with damage in geomaterials*, **Nonlinear Analysis** **222**, Article 112957 (2022),
- [23] V. Crismale, A. Kubin, A. Ninno, M. Ponsiglione, *Failure of crystallization for generalized Lennard-Jones potentials and coarse graining to a rotating stars problem in one dimension*, **Nonlinear Analysis** **231**, Article 113046 (2023),
- [24] V. Crismale, G. Lazzaroni, R. Rossi, *Singular limits of a coupled elasto-plastic damage system as viscosity and hardening vanish*, **Ann. Mat. Pura Appl.** **202**, 1271-1312 (2023),
- [25] V. Crismale, A. Chambolle, *A general compactness theorem in $G(S)BD$* , **Indiana Univ. Math. J.** **74**, 233-249 (2025)
- [26] V. Crismale, G. Lazzaroni, R. Rossi, *On the visco-plastic approximation of a rate-independent coupled elastoplastic damage model*, **SIAM J. Math. Anal.** **56**, 7940-7988 (2024),
- [27] M. Caponi, V. Crismale, *A rate-independent model for geomaterials under compression coupling strain gradient plasticity and damage*, **ESAIM Control Optim. Calc. Var.** **22**, Article 14 (2025)

Preprints:

- [1] V. Crismale, L. De Luca, R. Scala, *Approximation of topological singularities through free discontinuity functionals: the critical and super-critical regimes*, <https://cvgmt.sns.it/paper/6680/>
- [2] A. Chambolle, V. Crismale, *A characterization of Generalized functions of Bounded Deformation*, <https://cvgmt.sns.it/paper/6990/>
- [3] V. Crismale, M. Friedrich, J. Seutter, *Adaptive finite element approximation for quasi-static crack growth*, <https://cvgmt.sns.it/paper/7046/>

Rome, 25/03/2025