

VITO CRISMALE

Curriculum Vitae

Parte I - Informazioni generali

Nome Vito Crismale
Cognome 15/07/1988
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Parte II - Formazione

- 10/12-09/16 **PhD in Applied Mathematics**, SISSA Trieste (Italy), **cum laude**
Tesi: *Some results on quasistatic evolution problems for unidirectional processes*
Supervisor: 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 **Laurea Magistrale in Matematica**, Università degli Studi di Bari Aldo Moro, Bari, *Curriculum in Pure Mathematics*, **110/110 cum laude**
Tesi: *Metodi variazionali e soluzioni solitoniche per alcune equazioni di campo*
Supervisor: Prof. D. Fortunato and Prof. L. Pisani
- 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 **Laurea Triennale in Matematica**, 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

Parte III - Incarichi

- 11/23-Oggi **Professore Associato**, Dipartimento di Matematica *Guido Castelnuovo*, Sapienza Università di Roma
- 11/20-10/23 **RTD B**, 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

Parte IV - Didattica

Corsi presso *Sapienza Università di Roma*:

- 09/21-01/25 *Analisi*, CdS Fisica (90h annue per 4 anni)
09/24-01/25 *Istituzioni di Matematica*, CdS Scienze Naturali (40h)
09/23-01/24 *Istituzioni di Matematica 1*, CdS Scienze Chimiche (40h)
03/21-06/21 *Istituzioni di Matematica 2*, CdS Scienze Chimiche (60h)
11/20-01/21 *Calcolo e Biostatistica*, CdS Biologia (40h)

Altri corsi:

- 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)

Parte V - Riconoscimenti

- 2023 Abilitazione Scientifica Nazionale a Professore di I Fascia, Settore concorsuale 01/A3, SSD MAT/05 (Analisi)
2021 **Junior Prize ISIMM 2020+21**—The International Society for the Interaction of Mechanics and Mathematics <https://isimm.net/history/>
2020 Abilitazione Scientifica Nazionale a Professore di II Fascia, Settore concorsuale 01/A3, SSD MAT/05 (Analisi)
2007-2010 **Borsa di studio laurea triennale**, Istituto Nazionale di Alta Matematica "F. Severi" (INdAM)
2010 **Miglior laureato in Matematica**, Università degli Studi di Bari Aldo Moro, Bari
2017 Abilitazione *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

Seminari su invito:

- 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, München, 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>

Parte VI - Finanziamenti

- 2022-Oggi Titolo: *Variational methods for stationary and evolution problems with singularities and interfaces*,
 Programma: *PRIN 2022*, Partecipante
- 2022-2024 Titolo: *Variational Approach to Defects at Rome 1*,
 Programma: *Progetto SEED PNR Sapienza*
 Importo: **10000 €**, Principal Investigator (individuale)
- 03/22-03/25 Titolo: *Analysis of some models in Materials Science with tools of Calculus of Variations and Geometric Measure Theory*,
 Programma: *Sapienza Progetti Ateneo 2021*,
 Importo: **14500 €**, Principal Investigator
- 2017-2022 Titolo: *Variational methods for stationary and evolution problems with singularities and interfaces*,
 Programma: *PRIN 2017*, Partecipante
- 10/18-09/20 Titolo: **BriCoFra**, *New ideas for the Variational Approach to Brittle and Cohesive Fracture*,
 Programma: *H2020-MSCA-IF-2017, Action MSCA-IF-EF-ST (Standard EF), Project n. 793018*,
 Importo: **173076 €**, Principal Investigator (individuale)
- 10/16-09/18 Titolo: *Evolutionary models for elastoplasticity coupled with damage*
 Programma: Investissement d'avenir project, reference ANR-11-LABX-0056-LMH, LabEx LMH
 Importo: **70000 €**, Principal Investigator (individuale)
- 2016 Titolo: *Multiscale analysis of complex systems with variational methods*
 Programma: Progetto INdAM-GNAMPA 2016
 Importo: **3200 €**, Partecipante (8 collaborators, coordinatore Dr. G. Lazzaroni)

Parte VII - Attività scientifiche

Altri seminari su invito:

- 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

Organizzazione di eventi scientifici

- 2024 Con Proff. A. Garroni, L. De Luca, A. Malusa, E. Spadaro, Evento *Vito Volterra Meeting 2024*, 24-28 Giugno 2024, Roma
<https://sites.google.com/uniroma1.it/volterrameeting2024/>
- 2023 Con Proff. A. Garroni, A. Malusa, E. Spadaro, Evento *Vito Volterra Meeting 2023*, 5-9 Giugno 2023, Roma
<https://sites.google.com/uniroma1.it/volterrameeting2023>
- 2022 Con Proff. A. Garroni, A. Malusa, E. Spadaro, Evento *20 years of Summer Schools on CalcVar in Rome*, 13-17 Giugno 2022, Roma
<https://sites.google.com/uniroma1.it/summerschool2022>
- 2021 Con Proff. L. Freddi, G. Lazzaroni, and Dr. G. Orlando, 3 minisimposia al *Congresso Nazionale 2018 SIMAI-Società Italiana di Matematica Applicata e Industriale*, 30/08-03/09 2018, Parma
<http://www.simai.unipr.it/conference-program/1/>
- 2019 Con 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 Con Dr. G. Lazzaroni, 2 minisimposia al *Congresso Nazionale 2018 SIMAI-Società Italiana di Matematica Applicata e Industriale*, 02-06 July 2018, Roma
<https://ocs.simai.eu/index.php/SIMAIcongress/SIMAI2018>

Incarichi accademici

2024 Membro commissione Postdoc in PRIN 2022

2021/23 Membro Commissione Ricerca Sapienza

2021-24 Membro commissione di Dipartimento per Olimpiadi di Matematica

Visite di ricerca

09-12/12/18 University of Münster, Germany, invitato da Prof. M. Friedrich

22-28/11/18 Università di Pavia, invitato da Prof. M. G. Mora

02-05/05/18 CMAF Lisbona, Portugal, invitato da Prof. N. van Goethem

22-31/01/18 TUM München, Germany, invitato da Prof. M. Cicalese

25-28/09/17 Università di Brescia, invitato da Prof. R. Rossi

06-10/03/17 Università *La Sapienza* di Roma, invitato da Prof. A. Garroni

Attività editoriale

- Referee per 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 per Mathematical Reviews/MathSciNet

Parte VIII - Pubblicazioni

- [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.**, <http://iumj.org/pipeline/preprints/>,

- [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),

Preprints:

- [1] M. Caponi, V. Crismale, *A rate-independent model for geomaterials under compression coupling strain gradient plasticity and damage*, <https://cvgmt.sns.it/paper/6303/>
- [2] 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/>

Roma, 14/12/2024