CURRICULUM VITAE

EUROPEAN FORMAT

INFORMAZIONI PERSONALI/ PERSONAL INFORMATION

Nome, Cognome/Name, Surname	Pierluigi, Colli
Indirizzo/Address Via, numero civico, c.a.p., città, nazione/ House number, street name, postcode, city, country	Dipartimento di Matematica "F. Casorati" Università di Pavia, Via Ferrata 1 27100 Pavia, ITALY
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Nazionalità/Nationality	

ESPERIENZA PROFESSIONALE /WORK EXPERIENCE

Se dipendente CNR indicare:	**N. MATRICOLA** **QUALIFICA** **LIVELLO**
In ordine di data /Dates (from – to) [Iniziare con le più recenti ed elencare separatamente ciascun incarico ricoperto/ Add separate entries for each relevant post occupied, starting with the most recent.]	Current position: full professor of Mathematical Analysis at the University of Pavia, since November 1, 1997. Research Associate at the Istituto di Matematica Applicata e Tecnologie Informatiche "Enrico Magenes", Consiglio Nazionale delle Ricerche, Pavia since since March 1, 2012 (before this date, Collaborator in the Reaserch Activities of the IMATI). Previous positions: 1) researcher of Mathematical Analysis at the Faculty of Engineering of the University of Pavia, from June 1983 to October 1992; 2) associate professor of Mathematical Analysis at the Faculty of Engineering of the University of Pavia, from November 1992 to October 1994; 3) full professor of Mathematical Analysis at the Faculty of Sciences of the University of Torino, from November 1994 to October 1997.
Nome e indirizzo del datore di lavoro / Name and address of employer	Università degli Studi di Pavia, Strada Nuova 65, 27100 Pavia, ITALY
Tipo o settore di attività / Type of business or sector	Education and Research
Funzione o posto occupato / Occupation or position held	Full professor in a public university

Principali mansion e responsabilità / Main activities and responsibilities	Teaching, research activity, direction and other administrative duties

Educational Background.

In ordine di data /Dates (from – to)

[Iniziare con le più recenti ed elencare separatamente ciascun corso frequentato con successo/ Add separate entries for each relevant course you have completed, starting with the most recent.]

Doctor Degree. I have no official Doctor Degree in Mathematics in the sense of a PhD. The reason is that at that time in Italy there was not the possibility of performing doctoral studies, which started later, and obviously a doctor title was not necessary to begin an academic career.

Nome e tipo d'istituto di istruzione o formazione / Name and type of organisation providing education and training

University. Studies in Mathematics at the `Università degli Studi di Pavia, Strada Nuova 65, 27100 Pavia, Italy', with graduation on October 19, 1981. See above

Principali materie e competenze professionali apprese / Principal subjects occupational skills covered

Mathematics, in particular Mathematical Analysis

Certificato o diploma ottenuto /Title of qualification awarded

Master's degree in mathematics

Livello nella classificazione nazionale o internazionale / Level in National classification

Master level

ATTIVITA' DI RICERCA / RESEARCH ACTIVITIES

Attuali campi di ricerca / Research sectors

Nonlinear Partial Differential Equations; Parabolic equations and evolution problems; Phase transition systems; Well-posedness, regularity, asymptotics, optimal control; Variational approach.

Concerning the research activity, some recent research subjects regard the

- well-posedness, regularity and control problems for systems modelling tumor growth;

- well-posedness, regularity, longtime behavior and optimal control for Cahn-Hilliard systems;

- the well-posedness for a diffusion-reaction compartmental model simulating the spread of COVID-19;

- Cahn-Hilliard models coupled to viscoelasticity with large déformations;

- well-posedness and optimal control of a sixth-order Cahn-Hilliard equation;

- the nonlocal to local convergence of phase field systems with inertial term;

- optimality conditions for sparse optimal control of viscous Cahn-Hilliard systems with logarithmic potential;

- a chemotaxis-inspired PDE model for airborne infectious disease transmission, with analysis and simulations ;

- second-order optimality conditions for the sparse optimal control of nonviscous Cahn-Hilliard systems ;

- the solvability and optimal control of a multi-species Cahn-Hilliard-Keller-Segel tumor growth model;

- the hyperbolic relaxation of the chemical potential in the viscous Cahn-Hilliard equation.

Edited Volumes (recent)

P. Colli, A. Favini, E. Rocca, G. Schimperna & J. Sprekels (ed.), Solvability, Regularity, Optimal Control of Boundary Value Problems for PDEs, Springer INdAM Series 22, Springer, Cham, 2017.

P. Colli, M. Conti, A. Miranville, V. Pata & E. Rocca, Preface. Issue on Mathematics, Models & Applications: Dedicated to Professor Maurizio Grasselli, on the Occasion of His 60th Birthday, Discrete Contin. Dyn. Syst. Ser. S 15 (2022), no. 8, i-iii.

Recent Papers (2020-2025)

P. Colli & S. Kurima, Global existence for a phase separation system deduced from the entropy balance, Nonlinear Anal. 190 (2020), 111613, 31 pp.

P. Colli, H. Gomez, G. Lorenzo, G. Marinoschi, A. Reali & E. Rocca, Mathematical analysis and simulation study of a phase-field model of prostate cancer growth with chemotherapy and antiangiogenic therapy effects, Math. Models Methods Appl. Sci. 30 (2020), 1253-1295.

P. Colli, T. Fukao & H. Wu, On a transmission problem for equation and dynamic boundary condition of Cahn–Hilliard type with nonsmooth potentials, Math. Nachr. 293 (2020), 2051-2081.

E. Bonetti, P. Colli, L. Scarpa & G. Tomassetti, Bounded solutions and their asymptotics for a doubly nonlinear Cahn–Hilliard system, Calc. Var. Partial Dif- ferential Equations 59 (2020), Paper No. 88, 25 pp.

P. Colli, G. Gilardi & J. Sprekels, Asymptotic analysis of a tumor growth model with fractional operators, Asymptot. Anal. 120 (2020), 41-72.

P. Colli & D. Manini, Sliding mode control for a generalization of the Caginalp phase-field system, Appl. Math. Optim. 84 (2021), 1395-1433.

P. Colli, M.H. Farshbaf-Shaker, K. Shirakawa & N. Yamazaki, Optimal control for shape memory alloys of the one-dimensional Frémond model, Numer. Funct. Anal. Optim. 41 (2020), 1421-1471.

P. Colli, G. Gilardi & G. Marinoschi, Solvability and sliding mode control for the viscous Cahn–Hilliard system with a possibly singular potential, Math. Control Relat. Fields 11 (2021), 905-934.

P. Colli & T. Fukao, Vanishing diffusion in a dynamic boundary condition for the Cahn–Hilliard equation, NoDEA Nonlinear Differential Equations Appl. 27 (2020), Paper No. 53, 27 pp.

P. Colli, G. Gilardi & J. Sprekels, An asymptotic analysis for a generalized Cahn– Hilliard system with fractional operators, J. Evol. Equ. 21 (2021), 2749-2778.

P. Colli, H. Gomez, G. Lorenzo, G. Marinoschi, A. Reali & E. Rocca, Optimal control of cytotoxic and antiangiogenic therapies on prostate cancer growth, Math. Models Methods Appl. Sci. 31 (2021), 1419-1468.

P. Colli, A. Signori & J. Sprekels, Second-order analysis of an optimal control problem in a phase field tumor growth model with singular potentials and chemo- taxis, ESAIM Control Optim. Calc. Var. 27 (2021), Paper No. 73, 46 pp.

G. Gilioli, P. Colli, M. Colturato, P. Gervasio & G. Sperandio, A nonlinear model for stage-structured population dynamics with nonlocal density-dependent regulation: an application to the fall armyworm moth, Math. Biosci. 335 (2021), 108573, 13 pp.

P. Colli, A. Signori & J. Sprekels, Correction to: Optimal control of a phase field system modelling tumor growth with chemotaxis and singular potentials, Appl. Math. Optim. 84 (2021), 3569-3570.

P. Colli, G. Gilardi & J. Sprekels, Well-posedness for a class of phase-field systems modeling prostate cancer growth with fractional operators and general nonlinearities, Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl. 33 (2022), 193-228.

P. Colli, A. Signori & J. Sprekels, Optimal control problems with sparsity for phase field tumor growth models involving variational inequalities, J. Optim. Theory Appl. 194 (2022), 25-58.

P. Colli, T. Fukao & L. Scarpa, The Cahn–Hilliard equation with forward-backward dynamic bound- ary condition via vanishing viscosity, SIAM J. Math. Anal. 54 (2022), 3292-3315.

P. Colli, A. Signori & J. Sprekels, Analysis and optimal control theory for a phase field model of Caginalp type with thermal memory, Commun. Optim. Theory 2022 (2022), 4, 31 pp.

P. Colli, G. Gilardi, E. Rocca & J. Sprekels, Well-posedness and optimal control for a Cahn– Hilliard–Oono system with control in the mass term, Discrete Contin. Dyn. Syst. Ser. S 15 (2022), 2135-2172.

F. Auricchio, P. Colli, G. Gilardi, A. Reali & E. Rocca, Well-posedness for a diffusion-reaction compartmental model simulating the spread of COVID-19, Math. Methods Appl. Sci. 46 (2023), 12529-12548.

P. Colli, G. Gilardi, A. Signori & J. Sprekels, Cahn–Hilliard–Brinkman model for tumor growth with possibly singular potentials, Nonlinearity 36 (2023), 4470-4500.

P. Colli, T. Fukao & L. Scarpa, A Cahn–Hilliard system with forward-backward dynamic boundary condition and non-smooth potentials, J. Evol. Equ. 22 (2022), Paper No. 89, 31 pp.

A. Agosti, P. Colli, H. Garcke & E. Rocca, A Cahn–Hilliard phase field model coupled to an Allen– Cahn model of viscoelasticity at large strains, Nonlinearity, 36 (2023) 6589–6638.

P. Colli, G. Gilardi, A. Signori & J. Sprekels, Optimal temperature distribution for a nonisothermal Cahn–Hilliard system with source term, Appl. Math. Optim. 88 (2023), no. 2, Paper No. 68, 31 pp.

P. Colli, G. Gilardi, A. Signori & J. Sprekels, Optimal temperature distribution for a nonisothermal Cahn–Hilliard system in two dimensions with source term and double obstacle potential, Ann. Acad. Rom. Sci. Ser. Math. Appl. 15 (2023), 175-204.

P. Colli, G. Gilardi, G. Marinoschi & E. Rocca, Optimal control of a reaction-diffusion model related to the spread of COVID-19, Anal. Appl. (Singap.) 22 (2024), 111-136.

P. Colli, G. Gilardi & G. Marinoschi, Global solution and optimal control of an epidemic propagation with a heterogeneous diffusion, Appl. Math. Optim. 89 (2024), no. 1, Paper No. 28, 27 pp.

P. Colli, P. Knopf, G. Schimperna & A. Signori, Two-phase flows through porous media described by a Cahn–Hilliard–Brinkman model with dynamic boundary conditions, J. Evol. Equ. 24 (2024), no. 4, Paper No. 85, 55 pp.

P. Colli, G. Gilardi, A. Signori & J. Sprekels, Curvature effects in pattern formation: well-posedness and optimal control of a sixth-order Cahn–Hilliard equation, SIAM J. Math. Anal. 56 (2024), 4928- 4969.

P. Colli, S. Kurima & L. Scarpa, Nonlocal to local convergence of phase field systems with inertial term, Appl. Math. Optim. 90 (2024), no. 1, Paper No. 21, 16 pp.

P. Colli, J. Sprekels & F. Tröltzsch, Optimality conditions for sparse optimal control of viscous Cahn–Hilliard systems with logarithmic potential, Appl. Math. Optim. 90 (2024), no. 2, Paper No. 47, 48 pp.

P. Colli, G. Marinoschi, E. Rocca & A. Viguerie, Chemotaxis-inspired PDE model for airborne infectious disease transmission: analysis and simulations, J. Nonlinear Sci. 35 (2025), no. 1, Paper No. 28, 38 pp.

| **ULTERIORI INFORMAZIONI / ADDITIONAL INFORMATION** | My teaching experience includes courses in Calculus and Advanced Calculus for students in Mathematics, Physics, Science, and Engineering, as well as graduate-level courses in Nonlinear Partial Differential Equations for PhD students. |

My teaching experience includes courses in Calculus and Advanced Calculus for students in Mathematics, Physics, Science, and Engineering, as well as graduate-level courses in Nonlinear Partial Differential Equations for PhD students.

In terms of research, I have coauthored over 200 publications. My main interests lie in existence and uniqueness theorems for partial differential equations. Additional research topics include regularity results, the asymptotic behavior of solutions with respect to time or certain parameters, stability and convergence analysis, error estimates for time discretization and other approximation methods, and optimal control problems involving systems of PDEs.

I spent the academic year 1985–86 at Université Pierre et Marie Curie (Paris VI) and have visited several universities abroad. I have participated in numerous international conferences and workshops, often contributing talks and occasionally assisting in their organization.

I currently serve on the editorial boards of Mathematical Methods in the Applied Sciences (since 1997) and Advances in Mathematical Sciences and Applications (since 2002).

Further information is available on my webpage: http://www-dimat.unipv.it/pier/

TRATTAMENTO DEI DATI PERSONALI, INFORMATIVA E CONSENSO

Il D.Lgs. 30/6/2003, n. 196 "*Codice in materia di protezione dei dati personali*" regola il trattamento dei dati personali, con particolare riferimento alla riservatezza, all'identità personale e al diritto di protezione dei dati personali; l'interessato deve essere previamente informato del trattamento .
La norma in considerazione intende come "trattamento" qualunque operazione o complesso di operazioni concernenti la raccolta, la registrazione, l'organizzazione, la conservazione, la consultazione, l'elaborazione, la modifica, la selezione, l'estrazione, il raffronto, l'utilizzo, l'interconnessione, il blocco, la comunicazione, la diffusione, la cancellazione e la distruzione di dati, anche se non registrati in una banca dati.
In relazione a quanto riportato, autorizzo il CNR al trattamento dei dati contenuti nel presente *curriculum vitae* e nella documentazione della quale fa parte integrante

(*barrare la casella*)   x   Si, acconsento

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONE (ART. 46 E 47 D.P.R. 445/2000)

Il sottoscritto Pierluigi Colli, ai sensi e per gli effetti degli articoli 46 e 47 e consapevole delle sanzioni penali previste dall'articolo 76 del D.P.R. 28 dicembre 2000, n. 445 nelle ipotesi di falsità in atti e dichiarazioni mendaci, dichiara che le informazioni riportate nel presente curriculum vitae, redatto in formato europeo, corrispondono a verità.

Pavia, 23 agosto 2025

(Pierluigi Colli)

Firmato da Pierluigi Colli – copia originale firmata conservata agli atti