

CURRICULUM VITAE (maximum 4 pages)

Part A. PERSONAL INFORMATION

CV date

18 May 2020

First and Family name	Gianni Pagnini			
Social Security, Passport, ID number	Y2782676N		Age	45
Posoarchar numbers		Researcher ID	C-1386-2012	
Researcher numbers		Orcid code	0000-0001-9917-4614	

A.1. Current position

Name of University/Institution	BCAM – Basque Center for Applied Mathematics				
Department	Mathematical Physics/Statistical Physics				
Address and Country	Alameda Mazarredo 14, 48009 Bilbao, Basque Country - Spain				
Phone number	946567842	E-mail	gpagnini@bcamath.org		
Current position	Ikerbasque	Research Associate	From	01/01/2018	
Espec. cód. UNESCO	120808, 220402, 220404, 2501.12, 2501.16				
Palabras clave	Diffusion, stochastic processes, fractional calculus, wildfires propagation, turbulent premixed combustion, turbulence				

A.2. Education

PhD	University	Year
PhD Environmental Sciences	Urbino (Italy)	2005
Italian Laurea in Physics	Bologna (Italy)	2000

A.3. JCR articles, h Index, thesis supervised...

H-Index: 15 Web of Science; 22 Google Scholar (i10-index: 38 Google Scholar) *Web of Science* JCR articles: 50
Sum of the Times Cited without self-citations: 905
Supervisor of 5 PhD Students; 3 PostDoc, 4 Master Thesis; 6 training internships.

Part B. CV SUMMARY (max. 3500 characters, including spaces)

Gianni Pagnini is permanent at BCAM since the 1st of January 2018 as Ikerbasque Researcher Associate. He is Research Line leader of the Statistical Physics line within the Mathematical Physics research area and guarantor of both the Severo Ochoa excellence accreditations awarded to BCAM: SEV-2017-0718 (ongoing) and SEV-2013-0323 (ended). His research is focused on stochastic processes and diffusion problems with applications also in propagation of fronts with random motion. He is PI of the project MTM2016-76016-R that is based on an original approach proposed by him for front propagation with applications to engineering and environmental problems, including wild-land fires (Trucchia et al., Geosci. Model Dev. 12, 69 (2019), Pagnini & Mentrelli, Nat. Hazards Earth Syst. Sci. 14, 2249 (2014), Kaur et al., Commun. Nonlinear Sci. Numer. Simul. 39, 300 (2016)). His education reflects his multidisciplinary approach: Laurea in Physics (Bologna, 2000, Italy) with a thesis where for the first time the fundamental solutions of space-time fractional diffusion equations were obtained and the corresponding paper (Mainardi et al., Fract. Calc. Appl. Anal. 4, 153 (2001)) is a milestone on the subject (962 citations; Google Scholar); PhD in Environmental Sciences (Urbino, 2005, Italy) with a research on nonlinear stochastic modeling of turbulent relative dispersion (Pagnini, J. Fluid Mech. 616, 357 (2008)); and Qualification as Associate Professor in Mathematical Physics by the Italian Ministry of Education,

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University and Scientific Research. He is member of the expert database ANEP - National Evaluation and Foresight Agency - of the Spanish Minister of Economy, Industry and Competitiveness and he was project reviewer for foreign calls from Austria, Poland and the Polish-German Funding Initiative. He is member of the Editorial Board of the journals "Fractional Calculus and Applied Analysis" (Q1 ranked in Web of Science database) and "Communications in Applied and Industrial Mathematics" (the official journal of the Italian Society for Applied and Industrial Mathematics (SIMAI)), and of the Book Series on "Mathematics, Statistics, Logic, Systems Science" published by De Gruyter Open. He worked in Italian research centers on stochastic models for atmospheric pollutant dispersion (ISAO/ISAC-CNR, ENEA) and before joining BCAM he worked at CRS4 (www.crs4.it) on modeling random front propagation for turbulent premixed combustion and wild-land fires. He was IP of three funded projects within the Young Researchers Award by GNFM-INdAM (National Group of Mathematical Physics of the Italian National Institute of High Mathematics) and also of a two-years projects during his stay at CRS4. Since his arrival at BCAM in 2013, he organizes the yearly workshop FCPNLO - Fractional Calculus, Probability and Non-Local Operators. He was awarded the Prize for the Best Oral Presentation at the XXXIX Meeting of the Italian Section of the Combustion Institute in 2016. He published 52 peer-reviewed articles, 20 peer-reviewed proceedings, 4 chapter in book, 2 papers in book series, 1 technical report and served several times as Referee and as a Reviewer for Mathematical Reviews.

Part C. RELEVANT MERITS

C.1. Publications - Selected Publications (10)

1. Trucchia A., Egorova V., Butenko A., Kaur I., Pagnini G., RandomFront 2.3: a physical parameterisation of fire spotting for operational fire spread models – implementation in WRF-SFIRE and response analysis with LSFire+. Geosci. Model Dev. 12, 69–87 (2019)

Trucchia A., Egorova V., Pagnini G., Rochoux M., On the merits of sparse surrogates for global sensitivity analysis of multi-scale nonlinear problems: application to turbulence and fire-spotting model in wildland fire simulators. Commun. Nonlinear Sci. Numer. Simul. 73, 120–145, (2019)
 D'Ovidio M., Vitali S., Sposini V., Sliusarenko O., Paradisi P., Castellani G., Pagnini G., Centre-of-mass like superposition of OU processes: A pathway to non-autonomous stochastic differential equations and to fractional diffusion. Fract. Calc. Appl. Anal. 21, 1420–1435 (2018)

4. Vitali S., Sposini V., Sliusarenko O., Paradisi P., Castellani G., Pagnini G., Langevin equation in complex media and anomalous diffusion. J. R. Soc. Interface 15, 20180282 (2018)

5. Cusimano N., Del Teso F., Gerardo–Giorda L., Pagnini G., Discretizations of the spectral fractional Laplacian on general domains with Dirichlet, Neumann, and Robin boundary conditions. SIAM J. Numer. Anal. 56, 1243–1272 (2018)

6. Molina–García D., Pham T. Minh, Paradisi P., Manzo C., Pagnini G., Fractional kinetics emerging from ergodicity breaking in random media. Phys. Rev. E. 94, 052147 (2016)

7. Kaur I., Mentrelli A., Bosseur F., Filippi J.-B., Pagnini G., Turbulence and fire-spotting effects into wild-land fire simulators. Commun. Nonlinear Sci. Numer. Simul. 39, 300–320 (2016)

Pagnini G., Paradisi P., A stochastic solution with Gaussian stationary increments of the symmetric space-time fractional diffusion equation. Fract. Calc. Appl. Anal. 19, 408–440 (2016)
 Pagnini G., Mentrelli A., Modelling wildland fire propagation by tracking random fronts. Nat. Hazards Earth Syst. Sci. 14, 2249–2263 (2014)

10. Pagnini G., Short note on the emergence of fractional kinetics. Physica A 409, 29–34 (2014)

C.2. Research projects and grants

Guarantor Researcher: "Excellencia Severo Ochoa" accreditation MINECO (Ministerio de Economa y Competitividad) (2018–2022) SEV-2017-0718 (e 4,000,000). Project IP: L. Vega.
PI: "Novel Method for Modelling Interface Propagation with Environmental and Engineering Applications", MTM2016-76016-R (e 31,700). Project co-PI: J. Jansson.

- Guarantor Researcher: "Excellencia Severo Ochoa" accreditation MINECO (Ministerio de Economa y Competitividad) (2014–2018) SEV-2013-0323 (e 4,000,000). Project IP: L. Vega.

- Research Team Member: GNFM-INdAM (National Group for Mathematical Physics-National Institute of High Mathematics) Young Researcher Award 2015. Resarch program: A

Eulerian/Lagrangian Model for Combustion Fronts (e 5,000). Project PI A. Mentrelli. - Research Team Member: "Stabilized Adapative Galerkin Methods with Multiphysics

Applications", MTM2013-40824-P (e 47,955). Project PIs: J. Jansson and D. Pardo.

- Host Researcher:

<u>Bizkaia Talent 2015</u> "Anomalous Transport in Complex Systems: Stochastic Modeling and Statistical Data Analysis", Grant AYD-000-252 co-funded by Bizkaia Xede and European Commission (COFUND programme 2014/2016) (e 8,333.33). Project IP: P. Paradisi. <u>Bizkaia Talent 2013</u> "Combustion-Wave Interactions via Extended Thermodynamics", Grant AYD-000-226 co-funded by Bizkaia Xede and European Commission (COFUND programme 2014/2016) (e 28,500). Project PI: A. Mentrelli.

- PI GNFM-INdAM:

<u>Young Researcher Award 2013</u> "Development of an Hyperbolic Model in the Framework of Extended Thermodynamics to Study Combustion-Wave Interaction in Turbulent Premixed Combustion" (e 1,000).

Young Researcher Award 2010 "Research program: Evolution Equations for the Radius of a Spherical Flame" (e 1,000).

Workshop Organization grants: <u>1st (2013)</u>; <u>2nd (2014)</u>; <u>4th (2016)</u> and <u>5th (2017)</u> "FCPNLO - Fractional Calculus, Probability and Non-Local Operators", Basque Government, RC-2013-2-24 (e 5,000); RC-2014-1-273 (e 2,483); RC_2016_2_006(e 2,700); RC_2017_2_0024 (e 3,740)
Ikerbasque Start up funds: <u>2013</u> (e 4,000); <u>2017</u> (e 10,000).

C.3. Contracts

01/01/2018 - permanent Ikerbasque Research Associate at BCAM

01/01/2013 – 31/12/2017 Ikerbasque Research Fellows at BCAM

31/05/2010 - 30/05/2012 Researcher funded Project PI at CRS4, Pula (CA), Italy.

20/10/2008 - 30/05/2010 Scientific consultant at CRS4, Pula (CA), Italy.

17/10/2005 – 17/10/2008 Fellowship at ENEA, Bologna, Italy. Atmospheric Modelling Group.

01/04/2004 - 31/07/2004 Fellowship at ISAC-CNR, Bologna, Italy.

19/09/2003 – 26/11/2003 Professional collaboration at ISAC-CNR, Bologna, Italy.

15/07/2002 - 14/07/2003 Fellowship at ISAC-CNR, Bologna, Italy.

15/07/2002 – 14/07/2003 Fellowship at ISAC-CNR, Bologna, Italy.

C.4. Patents



C.5. Institutional responsibilities

- Member of the expert database ANEP - National Evaluation and Foresight Agency - of the Spanish Minister of Economy, Industry and Competitiveness.

- Project Reviewer:

<u>2015 SONATA</u>, Panel ST1 - Mathematics, of the executive government agency of the Poland National Science Centre (Narodowe Centrum Nauki - NCN; <u>http://www.ncn.gov.pl</u>).

<u>2016 "BEETHOVEN 2</u> - Polish-German Funding Initiative" by the German and Polish funding organisations Deutsche Forschungsgemeinschaft (DFG) and Narodowe Centrum Nauki (NCN). <u>2016 "Mathematics and ..."</u> of the Vienna Science and Technology Fund WWTF.

- PhD Commitee: Final Exam Evaluation Committee Doctoral Program Departamento de Ingeniería Cartográfica y del Terreno Escuela Politécnica Superior de Ávila Universidad de Salamanca, June 2018

- Evaluation Committee: "PhD Fellowships La Caixa Foundation 2016", BCAM, Bilbao, Spain

 Substitute member: Final Exam Evaluation Committee of the XXVI and XXVII cycle of Scuola Dottorale in Scienze Matematiche e Fisiche, Roma Tre, Applied Mathematics, March 2015.
 Organiser of BCAM Scientific Seminars, BCAM, Bilbao, Basque Country – Spain

C.6. Memberships of scientific societies

2015- Member of the Combustion Institute

2010- Member of Italian Society of Applied and Industrial Mathematics (SIMAI)

2010-2012; 2016 Member of Italian Society of Physics (SIF)

2001- Member of Italian National Group for Mathematical Physics of the Italian National Institute of High Mathematics (GNFM-INdAM): "Diffusion and Transport Problems"

C.7. Scientific event organization

- "*FCPNLO - Fractional Calculus, Probability and Non-Local Operators*", Bilbao, Spain, *1st* 6–8/11/2013; *2nd* 10–14/11/2014; *3rd* 18–20/11/2015; 4th 23-25/11/2016; 5th 8-10/11/2017; 6th 26-28/09/2018

Mini-symposia "MS33 Stochastic Models for Fractional Processes" and "MS34 Fractional Processes: Analytical and Numerical Methods" SIMAI Congress 2016, Milan, Italy, 13–16/9/2016.
Special Session "*Mathematical Aspects and Applications of Fractional Differential Equations*" 1st Joint Int. Meeting RSME–SCM–SEMA–SIMAI–UMI, Bilbao, Spain, June 30 - July 4, 2014.

C.8. Editorial activity

- Member of the Board of Assisting Editors of Fractional Calculus and Applied Analysis

- Member of the Editorial Board of Communications in Applied and Industrial Mathematics.

- Associate Editor of the Book Series on *Mathematics, Statistics, Logic, Systems Science* published by De Gruyter Open

- Co-Guest Editor of two Special Issues in Commun. Appl. Ind. Math. vol. 6 No. 1-2 (2014)

- More than 100 times Referee and more than 40 times Reviewer for Mathematical Reviews.

C.9. Awards

- Prize for the Best Oral Presentation at the XXXIX Meeting of the Italian Section of the Combustion Institute, Naples, Italy, July 4–6, 2016.