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Davide Augusto Bignamini

Curriculum Vitae

Name: Davide Augusto

Surname: Bignamini

Positions

March 2023 – Now

Assistant professor (RTD-a, S.S.D. MAT/06), Università dell’Insubria (Italy).

December 2022 – February 2023

Postdoctoral fellow (Assegno di ricerca, S.S.D. MAT/06), Università degli studi di Parma (Italy).

Advisor: Prof. Alessandra Lunardi (Università degli studi di Parma).

December 2021 – November 2022

Postdoctoral fellow (Assegno di ricerca, S.S.D. MAT/06), Università degli studi di Pavia (Italy).

Advisor: Prof. Enrico Priola (Università degli studi di Pavia).

Education

November 2018 – November 2021

Ph. D. in Mathematics, Joint Doctoral Program of the universities of Parma, Ferrara, Modena-Reggio Emilia (Italy). Thesis defence 24-02-2022.

Grade: Dottorato con lode (graduate with honors)

Thesis title: “Transition semigroups associated to nonlinear stochastic differential equations”

Advisor: Prof. Alessandra Lunardi (Università degli studi di Parma)

October 2015 – April 2018

MS in Mathematics, Università degli studi di Pavia (Italy). Thesis defence 26-04-2018.

Grade: 110/110 con lode (full marks with honors)

Thesis title: “Passeggiate aleatorie quantistiche aperte” (“Open quantum random walks”)

Advisor: Prof. Raffaella Carbone (Università degli studi di Pavia)

October 2011 – April 2015

BS in Mathematics, Università degli studi di Pavia (Italy). Thesis defence 15-04-2015.

Grade: 101/110

Thesis title: “Analisi delle serie temporali” (“Time series analysis”)

Advisor: Prof. Federico Bassetti (Politecnico di Milano)

Research interests

- Existence and uniqueness of weak and strong solutions to stochastic partial differential equations (SPDEs) in Banach or Hilbert spaces.
- Markov transition semigroups associated to SPDEs and their properties in spaces of continuous functions and L^p type spaces.
- Schauder and Sobolev regularity for Kolmogorov stationary and evolution equations associated to the SPDEs.

Papers

Published papers

- Bignamini D. A., Ferrari S., Fornaro S., Zanella M., *Differentiability in infinite dimension and the Malliavin calculus*, e-print arXiv:2308.05004, 2023. Accepted for publication in Probability Surveys.
- Bignamini D. A., Ferrari S., *Schauder estimates for stationary and evolution equations associated to stochastic reaction-diffusion equations driven by colored noise*, Stochastic Analysis and Applications, 42(3), 499–515, 2024.
Available online: 12 January 2024. DOI:10.1080/07362994.2024.2303099
- Esposito G., Simoni M., Quaini L., Bignamini D. A., Costa A., Righi F. *Impact of pre-partum nutraceutical or monensin intraruminal boluses on colostrum quality and Holstein dairy cows’ performance: exploratory field study*, Italian Journal of Animal Science, Volume 23, 2024.
Available online: 21 Mar 2024. DOI:10.1080/1828051X.2024.2325048
- Bignamini D. A., Ferrari S., *Schauder regularity results in separable Hilbert spaces*, Journal of Differential Equations, 370, 305–345, 2023.
Available online: 26 June 2023. DOI:10.1016/j.jde.2023.06.023
- Angiuli L., Bignamini D. A., Ferrari S., *Harnack inequalities with power $p \in (1, +\infty)$ for transition semigroups in Hilbert spaces*, Nonlinear Differential Equations and Applications NoDEA, 30(1), 2023.

Available online: 2 November 2022. DOI:10.1007/s00030-022-00812-0

• Bignamini D. A., *L^2 -theory for transition semigroups associated to dissipative systems*, Stochastic and Partial Differential Equations: Analysis and Computations, 11(3), 988–1043, 2023.

Available online: 23 April 2022. DOI:10.1007/s40072-022-00253-x

• Bignamini D.A., Ferrari S., *On generators of transition semigroups associated to semilinear stochastic partial differential equations*, Journal of Mathematical Analysis and Applications, 508(1), 2022.

Available online: 29 November 2021. DOI:10.1016/j.jmaa.2021.125878

• Bignamini D. A., Ferrari S., *Regularizing properties of (non-Gaussian) transition semigroups in Hilbert spaces*, Potential Analysis 58(1), 1–35, 2021.

Available online: 3 June 2021. DOI:10.1007/s11118-021-09931-2

• Simoni M., Temmar R., Bignamini D.A., Foskolos A., Sabbioni A., Ablondi M., Quarantelli A., Righi F., *Effects of the combination between selected phytochemicals and the carriers silica and Tween 80 on dry matter and neutral detergent fibre digestibility of common feeds*, Italian Journal of Animal Science, Volume 19, 2020.

Available online: 11 July 2020. DOI:10.1080/1828051X.2020.1787882

Submitted Preprints

• Addona D., Bignamini D. A., *Pathwise uniqueness in infinite dimension under weak structure conditions*, e-print arXiv:2405.14819, 2024.

• Angiuli L., Bignamini D. A., Ferrari S., *L^p - L^q estimates for transition semigroups associated to stochastic dissipative systems*, e-print arXiv:2311.04523, 2024.

• Bignamini D. A., De Fazio P., *Log-Sobolev inequalities and hypercontractivity for Ornstein-Uhlenbeck evolution operators in infinite dimensions*, e-print arXiv:2309.07319, 2024.

• Addona D., Bignamini D. A., *Pathwise uniqueness for stochastic heat and damped equations with Hölder continuous drift*, e-print arXiv:2308.05415, 2023.

Fellowships and Grants

October 2023

Research project “Stochastic partial differential equations and Kolmogorov equations” for the activation of one year post-doctoral research grant.

Principal Investigator, Uninsubria 2023

Amount 19,367 €

April 2023

Research project “Equazioni differenziali stocastiche e operatori di Kolmogorov in dimensione infinita”.

Principal Investigator, Indam-GNAMPA 2023

Amount 3,500 €

April 2023

Research project “Noise in fluid dynamics and related models”.

Project participant (P.I. F. Flandoli), PRIN 2022

April 2022

Research project “Analisi qualitativa PDE stocastiche: ergodicità ed equazioni di Kolmogorov”

Project participant (P.I. L. Scarpa), Indam-GNAMPA 2022

Amount 2,500 €

Talks

2-4 September 2024(Confirmed)

Contributed talk in the Conference “3 days in evolution PDEs 2024”, Agropoli, (Italy).

Talk Title: “*Schauder estimates and regularization by noise results in infinite dimension.*”

10 June 2024

Contributed talk in the Conference “Fourth italian meeting on probability and mathematical statistics”, Roma (Italy).

Talk title: “*Pathwise uniqueness for stochastic parabolic equations with Hölder continuous perturbation in the drift*”

3-7 June 2024

Contributed talk in the Conference “One-parameter semigroups of operators 2024: stochastic & dynamics”, Laval University (Canada), Online.

Talk title: “*Pathwise uniqueness for stochastic parabolic equations with Hölder continuous perturbations in the drift*”

12 December 2022

Contributed talk in “A Winter School by the Universities of Trento and Wuppertal: Stochastic process, Analysis and Semigroups”, Trento (Italy).

Talk Title: “*Harnack inequalities with power $p \in (1, +\infty)$ for transition semigroups associated to dissipative systems*”

14 November 2022

Invited talk in the series “ $(PMS)^2$ talk”, Università degli studi di Pavia (Italy).

Talk Title: “*How the regularity properties of a transition semigroup associated to an SPDE are affected by the color of the noise*”

15 September 2022

Contributed talk in the Conference “The 12th Euro-Maghrebian workshop on evolution equations”, Agadir (Morocco).

Talk title: “*A probabilistic approach to Schauder estimates in infinite dimension*”

1 September 2022

Invited talk in the Conference “Variational Methods & Evolution Equations: II edition”, Online.
Talk title: “*Schauder estimates for stationary equations associated to stochastic reaction-diffusion equations driven by colored noise*”

15 June 2022

Invited talk in the Conference “Third italian meeting on probability and mathematical statistics”, Bologna (Italy).
Talk title: “*Transition semigroups and second order Kolmogorov operators in L^2 type spaces*”

28 April 2022

Invited talk, Università del Salento, Dipartimento di Matematica e Fisica “Ennio de Giorgi”, Lecce (Italy).
Talk Title: “*On smoothing properties of transition semigroups associated to a class of semilinear stochastic partial differential equations*”

3 March 2022

Talk in “Presentazioni Scientifiche per Progetto di Eccellenza”, Dipartimento di Matematica “Felice Casorati”, Pavia (Italy).
Talk Title: “*Transition semigroups associated to nonlinear stochastic differential equations*”

11 November 2021

Talk in the series “BatMat”, Università degli studi di Parma (Italy).
Talk Title: “*Semigrupperi Markoviani*”

8 September 2021

Contributed talk in the Conference “3 days in evolution PDEs”, Urbino (Italy).
Talk Title: “ *L^2 theory for transition semigroups associated to dissipative systems*”

21 October 2020

Invited talk, Università del Salento, Dipartimento di Matematica e Fisica “Ennio de Giorgi”, Lecce (Italy).
Talk Title: “*Regularization and summability improvement properties for transition semigroups*”

March 2020

Three talks in the series “Seminari di analisi in dimensione infinita”, Università degli studi di Parma (Italy).
Course Title: “*Stochastic integral and Wiener processes in Hilbert spaces*”

Short invited visits

18 October – 28 October 2020; 14 June – 2 July 2021; 20 April – 29 April 2022

Università del Salento Dipartimento di Matematica e Fisica “Ennio de Giorgi”, Lecce (Italy).

Service

Organized seminars:

6 October 2023

Seminar “Three talks on weak and strong uniqueness for SPDEs”, Università degli studi dell’Insubria (Italy).

Referee for:

- Probability Theory and Related Fields;
- Journal of Functional Analysis;
- Electronic Communications in Probability;
- Journal of Mathematical Analysis and Applications.
- Mathematical Methods in the Applied Science

Teaching

Academic years 2024/2025

Lecturer (Docente titolare) of the course “Probabilità” (8 CFU) for the Bachelor in Mathematics of Università degli studi dell’Insubria.

Academic years 2024/2025

Lecturer (Docente titolare) of the course “Matematica e Statistica” (Modulo di statistica, 3 CFU) for the Bachelor in Scienze dell’ambiente e della natura of Università degli studi dell’Insubria.

July 2024

Guest Lecturer (Docente contratto) of the course “Didattiche avanzate A”(2 CFU) for “Percorso formativo 60 CFU”, Università degli studi di Pavia.

22 July 2024 – 25 July 2024

Mini-course in the summer school of Dipartimento di Scienza e Alta Tecnologia Università dell’Insubria (Italy).

Course title: “*Il processo di Ornstein-Uhlenbeck*”

Academic years 2023/2024

Lecturer (Docente titolare) of the course “Probabilità” (8 CFU) for the Bachelor in Mathematics of Università degli studi dell’Insubria.

19 July 2023 - 21 July 2023

Mini-course in the summer school of Dipartimento di Scienza e Alta Tecnologia Università dell’Insubria (Italy).

Course title: “*Modello di Wright-Fisher e teoria coalescente*”

Academic years 2022/2023

Lecturer (Docente titolare) of the course “Probabilità” (4 CFU) for the Bachelor in Mathematics of Università degli studi dell’Insubria.

Academic years 2022/2023

Guest Lecturer (two hours) of the course “Infinite dimensional analysis” for the Phd school in Mathematics of Università degli studi di Parma (Docente titolare Alessandra Lunardi).

Academic year 2022/2023

Guest Lecturer (Docente contratto) of the course “Probabilità” (3 CFU) for the Master in Mathematics of Università degli studi di Pavia (Docente titolare Enrico Priola).

27 June 2022

Talk in “Talent days 2022”, Dipartimento di Matematica “Felice Casorati”, Pavia (Italy).

Talk Title: “*Qualche idea sui test statistici e un esempio*”

Academic year 2021/2022

Educational seminars (seminari didattici) for the course “Complementi di analisi matematica e statistica (Modulo di statistica)” for the Bachelor in Ingegneria industriale of Università degli studi di Pavia.

Academic year 2021/2022

Educational seminars (seminari didattici) for the course “Complementi di analisi matematica e statistica (Modulo di analisi)” for the Bachelor in Ingegneria industriale of Università degli studi di Pavia.

September 2021

Guest Lecturer of the course “Recupero di Matematica” for the Bachelor in Scienze della Natura e dell’Ambiente e Scienze Geologiche of Università degli studi di Parma.

March 2021

Guest Lecturer of the project “Corda Plus” of Università degli studi di Parma.

Academic year 2019/2020

Tutor of the course “Matematica” for the Bachelor in Scienze della Natura e dell’Ambiente e Scienze Geologiche of Università degli studi di Parma.

Academic year 2019/2020

Educational seminars (seminari didattici) for the course “Analisi 2A” for the Bachelor in Mathematics of Università degli studi di Parma.

June 2019

Guest Lecturer of the course “Statistica di base” for the course “Big Data” of society CISITA, Parma.

Academic year 2018/2019

Educational seminars (seminari didattici) for the course “Analisi 2A” for the Bachelor in Mathematics of Università degli studi di Parma.

Schools and conferences

2 September—4 September 2024(Confirmed)

Conference “3 days in evolution PDEs 2024”, Agropoli, (Italy).

10 June 2024—14 June 2024

Conference “Fourth italian meeting on probability and mathematical statistics”, Roma (Italy).

3 June 2024—7 June 2024

Conference “One-parameter semigroups of operators 2024: stochastic & dynamics”, Laval University (Canada), Online.

12 December 2022 – 16 December 2022

Winter School by the Universities of Trento and Wuppertal: Stochastic process, Analysis and Semigroups, Trento (Italy).

12 September 2022— 16 September 2022

Conference “The 12th Euro-Maghrebian workshop on evolution equations”, Agadir (Morocco).

1 September 2022— 2 September 2022

Conference “Variational Methods & Evolution Equations: II edition”, Online.

13 June 2022— 17 June 2022

Conference “Third italian meeting on probability and mathematical statistics”, Bologna (Italy).

8 September 2021 – 10 September 2021

Conference “3 days in evolution PDEs”, Urbino (Italy).

2 September 2019 – 7 September 2019

Conference “XXI Congresso dell’Unione Matematica Italiana”, Pavia (Italy).

1 July 2019 – 3 July 2019

Summer school “Topics in quantum probability”, Università degli studi di Genova (Italy).

15 January 2019 – 16 January 2019

Winter school “Stochastic PDEs and Mean-Field Games”, Università di Bologna (Italy).

23 November 2018

Conference “An autumn day in probability and statistical physics”, Università degli studi di Firenze (Italy).

15 October 2018 – 19 October 2018

Conference “The 39th International Conference on Quantum Probability and Infinite Dimensional Analysis, dedicated to Prof. Takeyuki Hida for his contributions to Infinite Dimensional Analysis and Quantum Probability”, Levico Terme (Italy).

Collaborations in statistical analysis

April 2022 – March 2023

Statistical consultant for the SIOT (Società Italiana di Ortopedia e Traumatologia).

October 2019 – present

I am collaborating with prof. Federico Righi and postdoc Marica Simoni of the Dipartimento di Medicina Veterinaria of Università degli studi di Parma.

Skills

Computer skills: LaTeX, C++, Matlab, R, Office.

Languages: Italian Native language, English good.

Date

18 July 2024, Pavia