

Giulio Pecorella, Ph.D. student

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Research activity

My research activity concerns partial differential equations of elliptic and parabolic type, focusing on degenerate operators that verify the Hörmander hypoellipticity condition. Part of my research activity is then based on the study of mathematical models that are based on these operators, such as the Kuramoto model.

Current role

2022 - present 📌 **Ph.D. in Mathematics**, Università degli studi di Modena e Reggio Emilia (administrative seat Università di Ferrara)
Supervisor: *Sergio Polidoro*

Education

2020 – 2022 📌 **Master degree in Mathematics** Università di Modena e Reggio Emilia.
Thesis title: *An approach based on Kolmogorov operator to a Kuramoto model with inertia.*
Supervisor: *Sergio Polidoro*, co-Supervisor: *Cecilia Vernia*

2017 – 2020 📌 **Bachelor degree in Vehicle Engineering** Università di Modena e Reggio Emilia.
Thesis title: *Spontaneous synchronization and Kuramoto model.*
Supervisor: *Cecilia Vernia*

Research Publications

Manuscript in preparation

- 1 G. Pecorella, “A Parametrix method for a class of second order degenerate elliptic and parabolic operators.”
- 2 G. Pecorella, S. Polidoro, and C. Vernia, “A study of the Kuramoto model for synchronization phenomena based on degenerate Kolmogorov-Fokker-Planck equations.”



Miscellaneous Experience

Workshop



- 17-21 April 2023 📌 **Geometric aspect of evolution and control**, Fernuniversität, Hagen (GER).
- 8-10 May 2023 📌 **Conservation laws and surroundings**, Università degli studi di Modena e Reggio Emilia, Reggio Emilia (ITA).
- 31 July-4 August 2023 📌 **International Workshop on Operator Theory and Application**, University of Helsinki (FIN).

Miscellaneous Experience (continued)



Poster sessions

- 17-21 April 2023  **Geometric aspect of evolution and control**, Fernuniversität, Hagen (GER)
- 22-24 May 2023  **International Conference on Elliptic and Parabolic Problems**, Accademia Pontaniana, Napoli (ITA).

Attended conferences

- 2-3 May 2023  **A research meeting in honour of Peter Sjögren**, Università degli studi di Padova, Padova (ITA).
- 22-24 May 2023  **International Conference on Elliptic and Parabolic Problems**, Accademia Pontaniana, Napoli (ITA).


Schools

- 7-11 November 2022  **Monotonicity: Tricks and application**, RISM course by M.Struwe; Varese(ITA).
- 28 August-8 September 2023  **From coin tossing to Parisi complexity theory**, SMI course by F.Camellini, P.Contucci, E.Mingione; Cortona(ITA).

Science Festival

- 22-24 September 2022  **Trieste Next**, Trieste (ITA).

Certifications

- 18 June 2015  **Cambridge certification**, English Level 1 certificate in ESOL international (First), Grade C, Siracusa (ITA).

Teaching

Courses

- November 2022 **"Matematica generale" for "Corso di Alta Formazione in Finanza"**, 12 hours, Alma mater studiorum.
- November 2023 **"Matematica generale" for "Corso di Alta Formazione in Finanza"**, 12 hours, Alma mater studiorum.

Tutoring

- September 2021 - December 2021 **"Analisi 1" for "Ingegneria informatica"**, 40 hours, Università di Modena e Reggio Emilia.
- January 2022 - July 2022 **"Analisi 1" for "Ingegneria del Veicolo"**, 20 hours, Università di Modena e Reggio Emilia.
- March 2022 - July 2022 **"Analisi 2" for "Ingegneria del Veicolo"**, 23 hours, Università di Modena e Reggio Emilia.
- October 2022 - December 2022 **"Metodi e modelli matematici" for "Ingegneria Elettronica"**, 20 hours, Università di Modena e Reggio Emilia.
- October 2022 - July 2023 **"Analisi 1" for "Ingegneria meccanica"**, 50 hours, Università di Modena e Reggio Emilia.

Teaching (continued)

January 2023 - July 2023	" Analisi 1 " for " Ingegneria del Veicolo ", 30 hours, Università di Modena e Reggio Emilia.
September 2023	" Precorsi FIM ", 9 hours, Università di Modena e Reggio Emilia.
October 2023 - December 2023	" Metodi e modelli matematici " for " Ingegneria Elettronica ", 25 hours, Università di Modena e Reggio Emilia.
October 2023 - July 2024	" Analisi 1 " for " Ingegneria meccanica ", 50 hours, Università di Modena e Reggio Emilia. " Analisi 1 " for " Ingegneria del Veicolo ", 55 hours, Università di Modena e Reggio Emilia.

Skills

Languages

- Italian-Mothertongue
- English-Advanced
- French-Beginner

Coding \LaTeX , MATLAB, Python.

07 November 2023