VIVIANA GRASSELLI

3 rue Augustin Fresnel 57000 Metz Technopôle ⋄ viviana.grasselli@univ-lorraine.fr

RESEARCH EXPERIENCE

Maître de conférences (associate professor) *2024 - present*
Institut Elie Cartan de Lorraine, Metz, France

Member of the Partial Differential Equations research team

Postdoctoral researcher *2023 - 2024*
Institut Elie Cartan de Lorraine, Metz, France

Member of the ANR-DFG French German project "Effective Approximation and Dynamics of Many-Body Quantum Systems "
Advisors: Sébastien Breteaux and Jérémy Faupin

Ph.D. program under the supervision of Prof. Jean-Marc Bouclet *2020 - 2023*
Institut de Mathématiques de Toulouse, France

Subject : "Study of the resolvent of the perturbed Schrödinger operator "

EDUCATION AND DEGREES

PhD in Mathematics *2023*
Université Paul Sabatier, Toulouse, France

Master's degree in Mathematics *2020*
Università di Pisa, Italy

Final degree mark: 110/110 (with honours)

Bachelor's degree in Mathematics *2017*
Università degli Studi di Perugia, Italy

Final degree mark: 110/110 (with honours)

RESEARCH INTERESTS

My research lies in the field of mathematical physics and in particular **quantum dynamics**. On one hand I have been studying **spectral properties** for perturbed Hamiltonians of systems in various manifolds settings. This spectral analysis is tightly linked to the dynamical behaviour of the systems. Recently I have also been interested in Hamiltonians for systems with **many particles**. My main focus is to study the rigorous link between properties of the many body evolution and properties of the effective model.

PREPRINTS AND PUBLICATIONS

Propagation Estimates for the Boson Star Equation *2025*
avec S. Breteaux and J. Faupin, submitted

Exponential Decay outside of the Light Cone for the Pseudo-Relativistic Non-Autonomous Schrödinger Equation *2025*
avec S. Breteaux and J. Faupin, submitted

On the number of bound states for fractional Schrödinger operators with critical and super-critical exponent *2025*
with S. Breteaux and J. Faupin, Journal of Spectral Theory 15 (2025), no. 2, pp. 611–645

On the definition of zero resonances for the Schrödinger operator with optimal scaling potentials *2025*
Osaka Journal of Mathematics 62(1): 123-144 (January 2025)

Dispersive equations on asymptotically conical manifolds: time decay in the low frequency regime *2023*
Annals of Global Analysis and Geometry 2023, 63, 17

INVITED TALKS

- **INVITED SPEAKER IN CONFERENCES**

Meeting MARGAUx :Numerical Analysis and PDEs *03/2026*
Institut de Mathématiques de Bordeaux, France

Conference "Emergent phenomena in many-body quantum systems " *12/2025*
CIRM, Marseille, France

Thematic days "Quantum Lo" *03/2025*
Institut Elie Cartan de Lorraine, Nancy, France

Mini workshop Effective Approximation and Dynamics of Many-Body Quantum Systems *03/2025*
IRMAR, Rennes, France

Journées Jeunes EDPistes en France *03/2024*
Institut de Mathématiques de Toulouse, France

Kick-off Meeting of the ANR-DFG project Effective Approximation and Dynamics of Many-Body Quantum Systems *08/2023*
Institut Elie Cartan de Lorraine, Metz, France

- **INVITED SPEAKER IN SEMINARS**

PDEs and Applications Seminar *03/2026*
Institut Elie Cartan de Lorraine, Nancy, France

Mathematical Physics Seminar *01/2026*
Politecnico di Milano, Milano, Italy

Analysis and Probability Seminar *01/2026*
CEREMADE, Paris, France

Statistical Mechanics Seminar *06/2025*
Warwick Mathematics Institute, Coventry, England

Meeting of the Analysis and Number Theory team *06/2024*
Institut Elie Cartan de Lorraine, Metz, France

Mathematical Physics seminar *04/2024*
Institut Camille Jordan, Lyon, France

Partial Differential Equations seminar *02/2024*
IRMAR, Rennes, France

Quantum and Classical Dynamics seminar *01/2024*
Centre de Physique Théorique, Marseille, France

Partial Differential Equations and Mathematical Physics seminar *01/2024*
LAGA, Université Sorbonne Paris Nord, Paris, France

Partial Differential Equations Analysis and Applications seminar *06/2023*
Institut Elie Cartan de Lorraine, Metz, France

Differential Equations seminar *05/2023*
Graduate School of Science Osaka University, Osaka, Japan

Spectral problems in Mathematical Physics seminar *12/2022*
Institut Henri Poincaré, Paris, France

Students seminar in Partial Differential Equations *06/2022*
Institut de Mathématiques de Toulouse, France

Analysis seminar *05/2022*
Institut de Mathématiques de Toulouse, France

POSTER SESSIONS

DynQua Conference *02/2025*
LAREMA, Université d'Angers, France

Summer school "Rigorous Renormalization Group Analysis of Collective Phenomena in Fermionic Quantum Systems" *08/2024*
Lake Como School of Advanced Studies, Italy

Summer school "Effective Approximation and Dynamics of Many-Body Quantum Systems" *06/2024*
Institut Elie Cartan de Lorraine, Metz, France

RESEARCH STAYS

Invited one month from Prof. I. M. Sigal *07/2025*
Department of Mathematics, University of Toronto, Canada

Invited two weeks from Prof. H. Mizutani *05/2023*
Mathematics Graduate School of Science, Osaka University, Japan

TEACHING EXPERIENCE

Université de Lorraine, Metz France *2025 - 2026*

- Analysis 3: exercises sessions. Bachelor's degree in Mathematics (*54h*)
- Analysis 4: exercises sessions. Bachelor's degree in Mathematics (*28h*)
- Numerical analysis: computer sessions. Bachelor's degree in Mathematics (*10h*)
- Optimisation: course, exercises and computer sessions. Master's degree in Mathematics (*36h*)
- Linear algebra and foundations of mathematics: course. Bachelor's degree in Computer Science (*70h*)

Université de Lorraine, Metz France *2024 - 2025*

- Analysis 3: exercises sessions. Bachelor's degree in Mathematics (*20h*)
- Analysis 4: exercises sessions. Bachelor's degree in Mathematics (*25h*)
- Numerical analysis: computer sessions. Bachelor's degree in Mathematics (*10h*)
- Linear algebra and foundations of mathematics: course. Bachelor's degree in Computer Science (*105h*)

Université de Lorraine, Metz France *2023 - 2024*

- Mathematical tools: course. Bachelor's degree in Computer Science (*30h*)

Université Paul Sabatier, Toulouse, France *2022 - 2023*

- Tutoring for Mathematics: exercises sessions. Bachelor's degree in Fundamental Sciences (*60h*)
- Linear Algebra: computer sessions. Bachelor's degree in Fundamental Sciences (*4h*)

Université Paul Sabatier, Toulouse, France *2021 - 2022*

- Tutoring for Mathematics: exercises sessions. Bachelor's degree in Fundamental Sciences (*30h*)
- Linear algebra: course. Bachelor's degree in Civil and Mechanical Engineering (*30h)*

Università di Pisa, Italy *2019 - 2020*

- Mathematics: exercises sessions. Bachelor's degree in Economics (*60h)*

ORGANIZING RESPONSABILITIES

Co-organizer of the PDE, Analysis and Applications seminar *2025 - present*
Institut Elie Cartan de Lorraine

Co-organizer of the PhD student seminar *2021-2023*
Institut de Mathématiques de Toulouse

Co-manager of the IMT- EUR MINT- Labex CIMI Twitter account *2021-2023*

PROGRAMMING SKILLS

C, Python, Matlab, Latex

SKILLS

Language	Italian (Native speaker), English (fluent), French (fluent)	
Certifications	IELTS certificate, Overall Band Score: 8, CEFR Level: C1	*2020*