Charles Collot

Born September 13, 1990. French nationality.

Current Position and research field

2018-2019 **Courant Instructor (Postdoctoral supervisor: P. Germain and N. Masmoudi)**, *New York University*, New York.

 I defended my PhD thesis with P. Raphaël which started in September 2014 in J.A. Dieudonné laboratory, Nice Côte d'Azur University (Nice, France). I am interested in qualitative properties of solutions of nonlinear evolution equations, dynamics near solitons, self-similar solutions, singularity formation and long time asymptotics. My research aims at understanding the behaviour of solutions to certain parabolic equations, wave equations, and equations of fluid dynamics.

Past positions

2017-2018 **Postdoctoral associate (with N. Masmoudi)**, *New York University in Abu Dhabi*, Abu Dhabi.

Education

2014-2017 **Ph.D. with P. Raphaël "On critical and supercritical blow-up for the semilinear heat and wave equations"**, *Nice Sophia Antipolis University*, Nice.
Defended on November 8, 2016,
Rapporteurs: T. Cazenave, N. Masmoudi, Jury: T. Cazenave, G. Lebeau, F. Merle, P. Raphaël, L. Vega.

2011-2013 **Master's Degree "Partial Differential Equations and Numerical Calculation" with first class honors**, *École Normale Supérieure and Orsay University*, Paris.

2008-2011 **Bachelor's Degree**, *École Normale Supérieure*, Paris.

Publications

On singularity formation for the two-dimensional unsteady Prandtl's system, *arXiv:1808.05967*, submitted, with T.-E. Ghoul, S. Ibrahim and N. Masmoudi.

Singularity formation for Burgers equation with transversal viscosity, *arXiv:1803.07826*, submitted, withT.-E. Ghoul and N. Masmoudi.

On strongly anisotropic type II blow-up, submitted, with F. Merle and P. Raphaël.

On the stability of type I blow up for the energy super critical heat equation, *arXiv:1605.07337*, to appear in Mem. Amer. Math. Soc., with P. Raphaël and J. Szeftel.

Dynamics near the ground state for the energy critical nonlinear heat equation in large dimensions, *a major part of arXiv:1604.08323*, to appear in Comm. Math. Phys., with F. Merle and P. Raphaël.

Stability of ODE blow-up for the energy critical semilinear heat equation, *a minor part of arXiv:1604.08323*, to appear in C. R. Math. Acad. Sci. Paris, with F. Merle and P. Raphaël.

Non radial type II blow up for the energy supercritical semilinear heat equation, *arXiv:1604.02856*, to appear in Anal. PDE.

Type II blow up manifolds for a supercritical semi-linear wave equation, *arXiv:1407.4525*, to appear in Mem. Amer. Math. Soc..

Organization

2014-2016 **Co-organizer of a J.A. Dieudonné Laboratory's PDE seminar, Co-organizer of the Ph.D. students' workshop, co-organizer of the Ph.D. students' seminar on PDEs and numerical analysis**, *Nice Sophia Antipolis University*, Nice.

Talks given at conferences and seminars

2018: Conference in honor of Lin and Shatah (Jan., Abu Dhabi), University of Victoria (Jan., Victoria), Courant Institute (Feb., New York), Journées Jeunes EDPistes (Mar., Nancy), Université libre de Bruxelles (Jun., Bruxelles), Conference Jeunes Chercheurs en EDP dispersives (Jun., Paris), Nonlinear Waves Conference (Jul., Karlsruhe).

2017: Journées jeunes EDPistes (Mar., Autrans), Lille university (May), Paris Dauphine university (May), Strasbourg university (Jun.), Nonlinear Waves and Dispersive Equations (Jun., Oberwolfach), Analyse asymptotique des équations d'évolution (Jul., C.I.R.M, Marseille), Nonlinear equations and singularity formation (Oct., Pauli Institute, Vienne), analysis seminar (Nov., American University of Sharjah).

2016: Ph.D. students seminar (Jan., Nice), Imperial college (Fev., London), Ph.D. students in sciences day (May, Nice), Laurent Schwartz seminar at IHES (May, Paris), Orsay University (Oct., Paris), Ph.D. students seminar (Oct., Rennes), Second Workshop on Evolution Equations (Dec., Valdivia, Chile).

2015: Ph.D. students seminar (May, Nice), Ph.D. students workshop (June, Nice), Ph.D. students seminar (Oct., Berkeley).

2014: workshop of the analysis team of Nice (Sep., Lecco), analysis team seminar (Nov., Nice).

Long term stays

Spring 2018: Invited researcher for three months at IHÉS, Bures-sur-Yvettes.
Winter 2018: One month at Courant Institute, New York.
Fall 2015: Program associate for "New Challenges in PDE" at MSRI, Berkeley.

Spoken languages

French and English (fluent), Spanish (intermediate), German and Portuguese (basic level).

Teaching

2018-2019   **Calculus I Instructor**, *New York University.*

2016-2017   **Tutorial in mathematics for economy (first year BA), tutorial in statistics for economy (first year BA)**, *Université Nice Côte d'Azur.*

2014-2016   **Course in mathematics for biology (first year BA), tutorial in discrete mathematics (first year BA)**, *Université Nice Côte d'Azur.*