

# Loth Damagui CHABI

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## ABOUT ME

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I am a third year PhD student under [Philippe SOUPLET](#) at "Laboratoire d'Analyse Géométrie et Applications" ([LAGA](#)), in "Université Sorbonne Paris Nord" ([USPN](#)) on the asymptotic blow-up behavior and Liouville-type properties for nonlinear parabolic equations (see [project](#) for more details).

## RESEARCH AREAS

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Qualitative analysis of partial differential equations (Nonlinear Heat and Hamilton - Jacobi equations, parabolic-elliptic Keller - Segel system), Functional analysis.

## PUBLICATIONS

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### Preprints

6. Sharp macroscopic blow-up behavior for the parabolic-elliptic Keller - Segel system in dimensions  $n \geq 3$  (with Philippe Souplet), [arXiv:2601.14469](#).
5. Classification of entire and ancient solutions of the diffusive Hamilton - Jacobi equation (with Philippe Souplet), [arXiv:2507.12214](#).
4. Optimal Hamilton-type gradient estimates for the heat equation on noncompact manifolds (with Philippe Souplet), [arXiv:2507.12190](#).

### Journal Articles

3. Refined blow-up behavior for reaction-diffusion equations with non-scale invariant exponential nonlinearities, *J. Dyn. Differ. Equ.* (2025). [ArXiv:2502.06426](#)
2. Asymptotic blow-up behavior for the semi-linear heat equation with non scale invariant nonlinearity, *J. Differ. Equ.* 435 (2025), 113303. [arXiv:2409.12660](#).
1. Refined behavior and structural universality of the blow-up profile for the semi-linear heat equation with non scale invariant nonlinearity (with Philippe Souplet), *Math. Ann.* 391 (2025), 4509-4554. [arXiv:2404.11863](#).

## PROFESSIONAL EXPERIENCES & OTHERS

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- 09/2023-: Teaching assistant (exercise sessions) at USPN-Department of mathematics (villetaneuse).
- 2025: Reviewer for the [Journal of Differential Equations](#) and the [Journal of Evolution Equations](#).
- [LAGA-USPN 2025-2026 PhD students seminar](#): co-organiser with [Nicolas Guès](#) and [Lucas Lagarde](#).
- Participation in the Master's Mathematics program improvement council – USPN (2025).
- Private Mathematics Tutor – [COMPLETUDE](#) (09/2023 - 01/2024).

## EDUCATION

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| <b>PhD project in Mathematic</b>  | 2023-2026 |
| Laboratoire d'Analyse Géométrie et Applications (LAGA -USPN)  |           |
| <b>Master of Mathematics Research (M2)</b>  | 2022-2023 |
| Université Sorbonne Paris Nord  |           |
| <b>Masters of Fundamental Mathematics and Applications (M1 - M2)</b>  | 2020-2022 |
| Institut de Mathématiques et de Science Physique (IMSP), Dangbo - Bénin   |           |
| <b>Undergraduate at IMSP:</b>   | 2017-2020 |
| • 1st and 2nd years: "Classes Préparatoires Scientifiques et Technologiques MPSI-PCSI": October 2017 - June 2019  |           |
| • 3rd year: "Licence spéciale des classes préparatoires", <b>option</b> mathematics: September 2019 - August 2020 |           |

## RESEARCH PROJECTS

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### Research internship M2 - USNP (May & June 2023):

"Non-linear Dirac equation for nucleons" under **Simona ROTA NODARI** (Université Côte d'Azur)

### Research internship M2 - IMSP (June - August 2022):

"Study of the linearized Ginzburg-Landau operator" under **Rémy RODIAC** (Université Paris - Saclay)

### Short research projet L3 - IMSP (July 2020):

"Measure of non - compactness and its applications" under **Guy DEGLA** (IMSP - Bénin)

## CONFERENCES AND TALKS

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12. **SCJC - MA 2026: Congrès des Jeunes Chercheur.e.s en Mathématiques Appliquées**, Champs-sur-Marne (France), March 2-4, 2026.
11. **Séminaire MAC-IMT**: Toulouse (France), January 27, 2026.
10. **ReaDiNet 2025: International Conference on Recent Topics in Reaction-Diffusion Systems and Their Applications** (Poster presentation): Hokkaido University Sapporo - Japan (20th - 24th, October 2025)
9. **Non-linear elliptic PDE in Hauts-de-France - fourth edition** (without talk): Calais - France (16-19, June 2025)
8. **Journées EDP 2025** (without talk): Centre Paul Langevin - Aussois - France (June 2-6, 2025)
7. **PhD Students Seminar & Others**. CY Cergy Paris Université (France) (April 29, 2025)
6. **Mostly Maximum Principle**: PUC - Rio de Janeiro (24-28, June 2024)
5. **PhD Seminar (LAGA), USPN - Villetaneuse** (France), April 17, 2025
4. **Modern Methods in Nonlinear Elliptic and Parabolic PDE**: ICMS - Plovdiv (27-31, May 2024)
3. **PhD Seminar (LAGA), USPN - Villetaneuse** (France), May 23, 2024
2. **PhD Seminar (LAGA), USPN - Villetaneuse** (France), February 15, 2024
1. **Euro-Japanese Conference on Nonlinear Diffusion** (without talk), ICMAT - Madrid (16-20, October 2023)

## TEACHING (EXERCISE SESSIONS)

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### 2025 - 2026

#### Semester 1

- "Analysis 3: Numerical series and generalized integrals" (2nd year undergraduate, Computer Science)
- "Algebra 1: Introduction to mathematical structures" (1st year undergraduate, Mathematics)

### 2024 - 2025

#### Semester 1

- "Analysis 3: Numerical series and generalized integrals" (2nd year undergraduate, Computer Science)

#### Semester 2

- "Algebra 1: Introduction to mathematical structures" (1st year undergraduate, Mathematics and Computer Science)

### 2023 - 2024

#### Semester 1

- "Analysis 3: Numerical series and generalized integrals" (2nd year undergraduate, Computer Science)
- "Analysis 1: Numerical sequences and usual functions" (1st year undergraduate, Mathematics)

#### Semester 2

- "Algebra 1: Introduction to mathematical structures" (1st year undergraduate, Mathematics and Computer Science)

## SCHOLARSHIPS & FUNDING

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- September 2023-August 2026: PhD project at LAGA-USPN
- September 2022-August 2023: **PGSM** scholarships for M2 Mathematics at USPN
- September 2020-August 2022: **CEA-SMIA** Scholarships for the master Mathematics at IMSP
- September 2017-August 2020: "Bourse d'excellence du gouvernement Béninois" for Undergraduate at IMSP

## AWARDS & DISTINCTIONS

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- Prize - **Hubi & Vinciane** Summer School 2017 (Tchaourou, Benin) Awarded during the project "Bananas in Every Family", focused on sustainable agriculture and community impact.
- Top Student - "**Jour des premiers**" in the commune of Tchaourou (BAC 2017):
  - Best Score in Mathematics
  - Best Score in Physics–Chemistry–Technology (PCT)
  - 1st Overall Ranking in the Commune