CURRICULUM VITÆ

Simon Labrunie

(September 2022)

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1 Personal Data

Name: Simon LABRUNIE
Born: 29 January 1971 in Grenoble (France)
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2 Education, Professional Experience, Mobility

1990–1992: École polytechnique (French engineering institute)
Majors: Mathematics, Partial Differential Equations.

1992–1993: Master in Applied Non-Linear Analysis from University Paris IX and École polytechnique.

1993–1996: Doctorate in Physics from Denis Diderot University (Paris VII).
Advisors: Prof. J.P. Gazeau (Paris VII) and Dr. R. Conte (CEA).

1998–1999: Post-doc at the Centre for Applied Mathematics (École polytechnique) and CEA Bruyères-le-Châtel, France.
Advisors: Prof. P.A. Raviart (École polytechnique) and Dr. J. Segré (CEA).

Since 1999: Associate Professor (*maître de conférences*) at the Élie Cartan Institute of Mathematics, Université Henri Poincaré (since 2012 merged within Université de Lorraine), Nancy, France.

2003–2005 : On secondment as Junior Researcher (*chargé de recherche*) at INRIA (French National Research Institute on Computer Science).

2005: Habilitation in Applied Mathematics from Université Henri Poincaré.

International Mobility

2002–2003 : Three-month period at the University of Granada (Spain), collaboration with Prof. José Antonio Carrillo.

2013: Three-month period at Texas A&M University, College Station (Texas).

3 Research

3.1 Interests

- Functional Analysis and Singularities for Maxwell's equations.
- Vlasov's equation and Modelling of Plasmas.
- Finite Element Methods, Numerical Methods for Conservation Laws.

3.2 Supervision of Students

Three completed post-docs, four completed and one ongoing PhD, one completed master thesis.

4 Administration & Various Responsibilities (selected)

4.1 INRIA and ANR

2012–2017: Local scientific leader in Nancy of the ANR[1] project CHROME (French acronym for "Heating, reflectometry and waves in magnetised plasmas"), led by Bruno Després (Jacques-Louis Lions Laboratory, University Paris 6).

[1] ANR (Agence Nationale de la Recherche) is a French government agency that supports scientific research, in roughly the same spirit as NSF. See: `http://www.agence-nationale-recherche.fr/`.

2003–2012: Deputy head of the INRIA project-team CALVI (French acronym for "Computing and Visualisation"), with delegation of signature for business orders, missions and invitations.

2005–2009: Leader of the mathematical part of the ANR project VLASOV ("Wave-particle interactions in Vlasov plasmas"), led by Alain Ghizzo (Institut Jean Lamour, Université de Lorraine).

4.2 Organisation of Scientific Meetings

- Fourth Singular Days (Pont-à-Mousson, France, 2004)
- Mini-symposium at the 36th French Congress on Numerical Analysis (Obernai, 2004)
- Member of the Organising Committee of the 43rd CANUM (Obernai, 2016)
- Eighth Singular Days (Nancy, France, June 2016)
- First French-Moroccan Congress of Applied Mathematics (Marrakesh, 2018)
- Journées d'Analyse numérique (Nancy, 2022)

5 Teaching (Master level, selected)

- Numerical Analysis of Hyperbolic Problems
- Evolution Equations and Semi-groups
- Scientific Computing, Numerical Mathematics, Numerical Analysis
- Probability
- Optimisation, Operations Research

6 Works and Publications

6.1 Summary

- One monograph
- 25 articles in peer-reviewed journals
- 13 communications in peer-reviewed conference proceedings

The complete list can be found in the extended CV (in French) on my web page.

6.2 Selected Publications

- F. Assous, P. Ciarlet Jr., S. Labrunie. *Mathematical foundations of computational electromagnetism*, Applied Mathematical Sciences, vol. 158, Springer, 2018.
- F. Assous, P. Ciarlet Jr., S. Labrunie. Theoretical tools to solve the axisymmetric Maxwell equations. *Math. Meth. Appl. Sci.* **25** (2002), 49–78.
- J.A. Carrillo, S. Labrunie. Global solutions for the one-dimensional Vlasov–Maxwell system for laser-plasma interaction. *Math. Models Methods Appl. Sci.* **16** (2006), 19–57.

- P. Ciarlet Jr., S. Labrunie. Numerical analysis of the generalized Maxwell equations (with an elliptic correction) for charged particle simulations. *Math. Models Methods Appl. Sci.* **19** (2009) 1959–1994.
- F. Karami, S. Labrunie, B. Pinçon. Singularities of Stationary solutions to the Vlasov–Poisson System in a Polygon. *Math. Models Methods Appl. Sci.* **23** (2013), 1029–1066.

6.3 Recent Publications

- S. Labrunie, I. Zaafrani. Linearized electrodynamics and stabilisation of a cold magnetized plasma, *ESAIM: COCV* **27** (2021) 60.
- M. Kohr, S. Labrunie, H. Mohsen, V. Nistor. Polynomial estimates for solutions of parametric elliptic equations on complete manifolds, *Stud. Univ. Babeş–Bolyai Math.* **67** (2022), 369–382.
- H. Mohsen, S. Labrunie, V. Nistor. Estimations polynomiales pour les problèmes de transmission sur des domaines à bords plats. To appear in *Tunisian J. Math.*

6.4 Invitations to International Conferences

- Miniworkshop "Analytical and Numerical Treatment of Singularities in Partial Differential Equations", Oberwolfach, 2002.
- *Sixth World Congress in Computational Mechanics & Second Asian-Pacific Congress on Computational Mechanics* (WCCM VI & APCOM'04), Beijing, 2004.
- CEA-EDF-INRIA summer school "Kinetic equations with applications to plasma and particle beam physics", Rocquencourt, 2005.
- *Sixth Singular Days on Asymptotic Methods for PDEs*, Berlin, 2010.
- *Fourth European Conference on Computational Mechanics* (ECCM'10), Paris, 2010.
- *Augmented Singular Days, in honour of Martin Costabel*, Rennes, France, 2013.
- *Eighth International Congress on Industrial and Applied Mathematics* (ICIAM), Beijing, 2015.
- Workshop "Optimization in Scientific Computing", Hong-Kong, 2017.
- CEA-EDF-INRIA summer school "Waves in Fusion Plasmas", Paris, 2017.
- *Fifteenth French-Romanian Colloquium on Applied Mathematics*, Toulouse, France, 2022.