

Simon TOURNIER

Born the 23rd June 1983 in Montpellier (France)
French

Tél. : +33 (0) 6 12 32 19 52
Email : simon.tournier@inserm.fr

Université de Paris Cité
Inserm US53 - UAR CNRS 2030
Saint Louis institute
(physically located at Hôpital Saint Louis)

Scientific Computing Computational Reproducibility

from Computational Electromagnetism and Acoustic to Biological data

ACADEMIC BACKGROUND AND EXPERIENCES

- 2016 – ...** **Research Engineer** position at the Université de Paris Cité (ex. Paris 7 Diderot) in charge of numerical Core Facilities in biological wet laboratory :
- contribute to reproducible software deployment ;
 - support about bioinformatics tools : predictive modeling, clustering analysis of flow cytometry data, mapping of Next Generation Sequencing (NGS) data and variant calling ;
 - administrate 9 nodes cluster and desktop computers, management of large data sets from biological experiments.
- 2014 – 2016** **Post-doctoral** position at the PUC (Chile) [FONDECYT grant : 3150446] under the supervision of Prof. Carlos Jerez-Hanckes,
Efficient and Robust HPC Solver for Multiple Traces Formulations for Engineering Applications.
- 2012 – 2014** **Post-doctoral** position at the Université de Liège (Belgium), in the ACE team, under the supervision of Prof. Christophe Geuzaine,
Study of some preconditioning techniques for Finite Elements Methods and Decomposition of Domain Method.
- 2007 – 2012** **PhD** from Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), Toulouse, under the supervision of Pierre Borderies (ONERA, Toulouse) and Jean-René Poirier (LAPLACE, Toulouse)
Defended the 22nd March 2012 at SupAéro (ISAE), with the jury composed by : Abderrahmane Bendali, Pierre Borderies, Christophe Bourlier, Christophe Geuzaine, Luc Giraud, Jean-René Poirier, Jean-Yves Suratteau.
Title : *Contribution of the modeling of the electromagnetic scattering by rough surfaces from rigorous methods.*
- 2007 7 months in EADS Innovation Works (Centre Commun de Recherches)
Engineer intern under the supervision of Andrew Thain.
- 2006–2007 **Master of Science** (*magna cum laude*) in “ElectroMagnetism and OptoElectronics”, Institut National Polytechnique, Toulouse.
Thesis under the supervision of Andrew Thain (EADS Innovation Works),
Numerical Simulations of antennas on large planes.
- 2004 – 2007** **Engineer degree** in Electronics and Signal Processing, ENSEEIHT, Toulouse.
- 2001–2004 Preparatory Class for entrance in engineering school, Montpellier.
Personal Project : Modeling of 1D snow avalanche and numerical simulation by finite difference.

PUBLICATIONS

Articles published under peer-review

- *Toward practical transparent verifiable and long-term reproducible research using Guix* – N. Vallet, D. Michonneau, [S. Tournier](#)
Nature Scientific Data, Vol. 9, No. 587, 2022
- *Azithromycin promotes relapse by disrupting immune and metabolic networks after allogeneic stem cell transplantation* – N. Vallet, L. Bondeelle, A. Corneau, D. Bouteiller, [S. Tournier](#), L. Derivry, A. Bohineust, M. Tourret, D. Gibert, S. Le Grand, R. Itzykson, B. Ingram, S. Cassonnet, P. Lepage, R. Peffault de Latour, G. Socie, A. Bergeron, D. Michonneau
Blood, to appear, 2022
- *Homogenization Techniques for Improving the Calculations of Scattering by 1-D Fast Oscillating Periodic Surfaces* – [S. Tournier](#), J.-R. Poirier, P. Borderies
IEEE Antennas and Propagation, Vol. 67, No. 1, pp 430-437, 2019

- *Local Multiple Traces Formulation for High-Frequency Scattering Problems by Spectral Elements*, C. Jerez-Hanckes, J. Pinto, S. Tournier
Scientific Computing in Electrical Engineering : SCEE 2014, Wuppertal, Germany, series Mathematics and Industry, Springer, pp. 73-82, 2016
- *GetDDM : an Open Framework for Testing Optimized Schwarz Methods for Time-Harmonic Wave Problems*, B. Thierry, A. Vion, S. Tournier, M. El Bouajaji, D. Colignon, N. Marsic, X. Antoine, C. Geuzaine
Computer Physics Communications, Vol. 203, pp. 309-330, 2016
(see www.onelab.info/wiki/GetDDM)
- *Local Multiple Traces Formulation for High-Frequency Scattering Problems*, C. Jerez-Hanckes, J. Pinto, S. Tournier
Journal of Computational and Applied Mathematics, Vol. 289, pp. 306-321, dec. 2015
- *Modélisation de la diffusion électromagnétique par des surfaces rugueuses à partir de méthodes rigoureuses*, S. Tournier, P. Borderies, J.-R. Poirier
Revue d'Electricité et Electronique, No. juin 2012
(request by the journal for section "Jeunes Chercheurs")
- *Integral Equations Physically based Preconditioner for Two Dimensional Electromagnetic Scattering by Rough Surfaces*, S. Tournier, P. Borderies, J.-R. Poirier
IEEE Antennas and Propagation, Vol. 59, No. 10, pp. 3764-3774, oct. 2011

International Conferences (with committee selection)

- **EFI/SPT 2019** Joint Meeting, Lisbon
Long-read nanopore sequencing of HLA class-I and -II amplicons for HLA typing; V. Allain, S. Tournier, A. Alberdi, P. Loiseau, J.-L. Taupin, S. Caillat-Zucman, I. Theodorou, N. Setterblad
- **SIAM 2016** Annual Meeting, Boston
Multiple Traces Formulations : Novel Extensions and Challenges; C. Jerez-Hanckes, S. Tournier
- **FACM 2016**, Newark
Multiple Traces Formulation : Preconditioning Strategies; C. Jerez-Hanckes, S. Tournier
- **WAVES 2015**, Karlsruhe,
Preconditioning Techniques for Local Multiple Traces Formulation for Scattering Problems; S. Tournier^{*}, J. Pinto, C. Jerez-Hanckes
- **WAVES 2015**, Karlsruhe,
Local Multiple Traces Modelling for High-Frequency Scattering; C. Jerez-Hanckes, J. Pinto, S. Tournier
- **PANACM 2015**, Buenos Aires,
Multiple Traces Formulation for High-Frequency Scattering; C. Jerez-Hanckes, J. Pinto, S. Tournier
- **IEEE ACAMA 2014**, Antibes Juan-les-Pins,
An Open Source Domain Decomposition Solver for Time-Harmonic Electromagnetic Wave Problems; C. Geuzaine, B. Thierry, N. Marsic, D. Colignon, A. Vion, S. Tournier, Y. Boubendir, M. El Bouajaji, X. Antoine
- **SCEE 2014**, Wuppertal,
Local Multiple Traces Formulation for High-Frequency Scattering Problems; C. Jerez-Hanckes, J. Pinto, S. Tournier
- **EuroEM 2012**, Toulouse,
Homogenization Techniques for Improving Electromagnetic Scattering Computation by Dielectric Surfaces; S. Tournier^{*}, P. Borderies, J.-R. Poirier
- **AMPERE 2011**, Toulouse – Best Poster Award
Analysis of QR-compression Techniques for Improving Electromagnetic Scattering Computation by Periodic Rough Surfaces; S. Tournier^{*}, J. Girardin, J.-R. Poirier, P. Borderies
- **PIERS 2010**, Cambridge,
Analysis of Homogenization Techniques for Improving Electromagnetic Scattering Computation by Rough Surfaces; S. Tournier^{*}, P. Borderies, J.-R. Poirier
- **WAVES 2009**, Pau,
A Physically-based Preconditioner for 2D Electromagnetic Rough Surfaces Scattering Problems; S. Tournier^{*}, P. Borderies, J.-R. Poirier
- **WAVES 2009**, Pau,
High order asymptotic expansion for the scattering of fast oscillating periodic surfaces; J.-R. Poirier, A. Bendali, P. Borderies, S. Tournier
- **PIERS 2009**, Beijing,
Analysis of Performances of a Floquet Mode Preconditioner for Electromagnetic Scattering Computation by Rough Surfaces; S. Tournier, J.-R. Poirier, P. Borderies
- **PIERS 2008**, Hangzhou,
Use of Numerical Methods for Assessing Validity Domains of the approximations Involved in Electromagnetic Interaction Modeling with vegetation; P. Borderies, J.-R. Poirier, S. Tournier, C. Lauprette, L. Villard, P. Dubois Fernandez, N. Floury

Organizing Committee Participation

- 10 Years of Guix – Sept. 2022
- Café Guix – since Oct. 2021
- Atelier reproductibilité des environnements logiciels – May 2021
- Online Guix Days – Nov. 2020, Feb. 2022
- Reproducible Research Hackathon – Jul. 2020

Reviewer for IEEE Antennas and Propagation, IEEE Geoscience and Remote Sensing

Teaching and **Mentoring** students since 2007.

COMPUTER SKILLS

Regular contributor to **GNU Guix** and member to the **GuixHPC** initiative

Scientific Programming

current daily use : Python, bash, Lisp, R
basic knowledge : Julia, Haskell, OCaml, Docker
previously used : Numpy/Scipy, C, Fortran, C++,
ex. advanced user : Gmsh, GetDP, Bem++

Tools

visualizing : Matplotlib, ggplot
editing : L^AT_EX/B^IB_TE_X, Markdown, Org, Emacs
version control : git, mercurial, subversion
debug : gdb, pdb, Valgrind, gprof
build automation : Makefile, CMake, Continuous Integration

OTHERS

voluntary of GÉNEPI
(from 2004 to 2009)
www.anciensdugenepi.fr

Intervention in prison
(*teaching, participation to an internal newspaper, sports*)
Organization of events to talk about problems of prison
(*intervention in high school, conferences, radio programme*)

participation to Guix Europe
<http://foundation.guix.info/>

Promotion of Guix and Free Software

Miscellaneous

Mountain (hiking, climbing)

REFERENCES

Jean-René POIRIER
LAPLACE – INPT-ENSEEIH
2, rue Charles Camichel, BP 7122
FR-31071 Toulouse, Cedex 7, France
poirier@laplace.univ-tlse.fr
+33 5 343 223 81

Christophe GEUZAIN
University of Liège
Montefiore Institute
Sart-Tilman, B28, P32
B-4000 Liège, Belgium
cgeuzaine@ulg.ac.be
+32 4 366 37 30

Niclas SETTERBLAD
Plateforme Technologique
Inserm US53, CNRS 2030
14, rue de la Grange aux Belles
FR-75010 Paris, France
niclas.setterblad@inserm.fr
+33 1 57 27 67 82