CV - Sylvie Monniaux

October 2016

48 years old, assistant professor in Marseille (France) since 1998, PhD in 1995 at the university of Besançon (France), HDR (habilitation) in 2007 at the university of Aix-Marseille (France), 28 papers listed in MathSciNet : http://www.ams.org/mathscinet/search/publications.html?pg1=INDI&s1=601753.

Research interests

Themes

Harmonic analysis, functional analysis, partial differential equations.

My research lies between functional analysis, (real) harmonic analysis and partial differential equations. I am an expert in the theory of semigroups, evolutions equations, (holomorphic) functional calculus for sectorial and bisectorial operators, techniques in the study of singular integrals and elliptic differential operators in non smooth domains.

Keywords

Maximal regularity, holomorphic functional calculus, non autonomous Cauchy problem, evolution equations, divergence form operators, non smooth domains, Navier-Stokes equations, first order systems.

Contents

1 Professional experiences

1.1 Personal informations

Name	Sylvie Monniaux french citizenship, born January 28,1968 (48 years old) in Saint-Germain-en-Laye (France).
Personal address	79 rue Breteuil - 13006 Marseille - France Phone : +33 (0)4 91 37 48 31
Current position	Assistant professor (maître de conférences) at the Université Aix-Marseille, France
Professional address	I2M - UMR 7373 - Université Aix-Marseille CMI - Technopôle de Château-Gombert 39 rue Frédéric Joliot-Curie 13453 Marseille Cédex 13 - France Phone : +33 (0)4 13 55 13 93 Fax : +33 (0)4 13 55 14 02
Email	sylvie.monniaux@univ-amu.fr
Web page	http://www.i2m.univ-amu.fr/~monniaux/

Research interests	Harmonic analysis, functional analysis, partial differential equations.
since Jan. 2012	Participant of the ANR (french National Research Agency) project "Harmonic Analysis at its Boudaries" (HAB), n° ANR-12-BS01-0013-03.
since Jan. 2016	Participant of the ANR project "INhomogeneous Flows: Asymptotic Models and Interfaces Evolution" (INFAMIE), n° ANR-15-CE40-0011-04.
Previous positions	
2011/12 and 2014/15	Sabbatical years at the CNRS (Centre National de la Recherche Scientifique - french National Center of Scientific Research).
2010	Sabbatical semester.
Septembre 2009	Maître de conférences "Hors Classe".
2002/03	Sabbatical year at the CNRS.
2000-2012	National research grant (renewed in 2004 and 2008).
since Sept.1998	Assistant professor (maître de conférences) at the Université Aix-Marseille (France).
1995-1998	Assistant professor at the Universität Ulm (Germany).
1993-1995	Teaching assistant at the Université de Franche-Comté (Besançon, France).
Prof. organisation	Member of the SMF (Société Mathématique de France).
Academic degrees	
03.04.2007	Defense of my habilitation at the Université Aix-Marseille "Régularité maximale et équations de Navier-Stokes", (Maximal regularity and Navier-Stokes equations).
committee:	Michel Crouzeix (Rennes, France), Thierry Gallouët (Marseille, France), Wolfgang Arendt (Ulm, Germany), Michel Pierre (Rennes, France), Jean-Yves Chemin (Paris 6, France), Zhongwei Shen (Univ. Kentucky, USA), Thierry Coulhon (Cergy-Pontoise, France), Philippe Tchamitchian (Marseille, France).
28.09.1995	Defense of my PhD thesis at the Université de Franche-Comté (Besançon, France) "Générateur analytique et régularité maximale" (Analytic generator and maximal regularity). advisor: Wolfgang Arendt.
thesis committee:	Philippe Bénilan (Besançon, France), Matthias Hieber (Karlsruhe, Germany), Jean-Bernard Baillon (Lyon, France), Christian Le Merdy (Besançon, France), Robert Deville (Bordeaux, France), Jan Prüss (Halle, Germany).
1993	Master degree in Mathematics at the Université de Franche-Comté.
1989-1993	Student at the École Normale Supérieure (Cachan, France).

1.2 Experiences

Committees

- **national level**

2003-07 Conseil National des Universités, 25ème section (national committee of evaluation, Mathematics).

- **local level**

2014- Member of the department board.

2008-11 Member of the Scientific Committee (conseil scientifique) of the University.

2007-11 Associate director education.

2004-07 Member of the Administration Committee (conseil d'administration) of the University.

- **research**

2007-14 advisor for acquisition of books at the CIRM (CNRS-SMF) library.

2015 Member of the thesis committee of Yi Huang (Paris, France; advisor: P. Auscher).

2005 Member of the thesis committee of César Poupaud (Bordeaux, France; advisor: E.M. Ouhabaz).

depuis 1999 Referee for the following mathematical journals:

Math. Z., J. Funct. Anal., Archiv Math., J. Diff. Eq., Appl. Math. Letters, J. of Math. Physics, J. Aust. Math. Soc., J. Nonlin. Anal.-A, J. Evol. Equ., Electronic J. Diff. Eq., Ann. Inst. Fourier, Adv. Math. Sci. Appl., J. Math. Anal. Appl., Control Optim. Calc. Var., Proc. Edinburgh Math. Soc., Pub. Mat., CPAA, DCDS, M2AS, SIAM J. Math. Anal.

2001-16 Member of the following hiring/selection committees:

Aix-Marseille, Besançon, Paris 6, Orsay (Paris 11), Bordeaux, Nantes, Lyon, ANU (for a post-doc position in 2015).

Organisation of conferences

Apr. 2018 Co-organiser (with Pierre Portal) of the international conference "Harmonic analysis of partial differential equations", at the "Centre International de Rencontres Mathématiques" (CIRM), in Luminy (France).

Nov. 2008 Co-organiser (with Fatiha Alabau and El Maati Ouhabaz) of the 6th Euro-Maghreb workshop "Semigroups, evolution equations and applications", at the CIRM.

Nov. 2007 Co-organiser (with Karim Kellay) of the workshop "Functional and harmonic analysis and applications", at the CIRM.

Oct. 2005 Co-organiser (with El Maati Ouhabaz and Valentin Zagrebnov) of the conference "Operator semigroups, evolution equations and spectral theory in mathematical physics " at the CIRM.

Mars 2001 Organiser of a graduate week "Analyse fonctionnelle et équations aux dérivées partielles" (Functional analysis and partial differential equations) at the CIRM.

1999-2000 Co-organiser (with Hervé Gaussier) of the Analysis Research Seminar.

Déc. 1997 Co-organiser of the workshop TULKA "Evolutionsgleichungen und Operatorhalbgruppen" (Evolution equations and semigroups) in Blaubeuren (Germany).

Teaching responsabilities

2004-07 Coordinator for undergraduate studies (first 3 academic years) in mathematics and computer science in Marseille.

2000-2004 Coordinator for the 3rd academic year (licence) of mathematics studie in Marseille.

1996-99 Coodinator of ERASMUS collaborations between Universität Ulm (Germany) and Universités de Bordeaux and Marne-la-Vallée and between Aix-Marseille and Ulm (Germany).

1.3 Teaching activities

Since 1998 — Teaching assignment in France is 192 hours per year.

Details of the recent teaching available on my webpage:

http://www.i2m.univ-amu.fr/~monniaux/doku.php?id=enseignement

Aside the classical lectures and tutorials in the first, second and third academic years, I taught the following graduate courses (sometimes also with tutorials):

Graduate courses

abroad

Oct. 2011-Feb. 2012 — Lecture (3 hours per week)

"PDEs in non smooth domains"

at the Technische Universität Darmstadt (Germany), as "Gastprofessor" (invited professor) during winter semester 2011-12.

Mars 2010 — Lecture (5 hours)

"Maximal regularity and applications to partial differential equations"

in the Spring school "Analytical and numerical aspects of evolution equations", at the Technische Universität Berlin (Germany).

Mai 2009 — Lecture (8 hours)

"Functional analysis and partial differential equations"

at the TU Berlin.

The script of the lecture has been published in a "de Gruyter Proceedings in Mathematics" volume; also available on my webpage.

May 2000 — Lecture (8 heures)

"Analytic generator and maximal regularity"

at the University of Puerto-Rico (USA).

in Marseille

2016 — Lecture (5^{th} academic year - 25 hours) "Problèmes d'évolution non autonome" (Non autonomous evolution problems).

2011 — Lecture (5^{th} academic year - 24 hours) "Problèmes au bord pour des edp elliptiques" (Boundary value problems for elliptic pde's).

2008 et 2009 — Lecture (4^{th} academic year - 24 hours) "Analyse et géométrie" (Analysis and Geometry).

2007 — Lecture (5^{th} academic year - 24 hours) "Semi-groupes, formes et équations de Navier-Stokes" (Semigroups, forms and Navier-Stokes equations).

2005, 2006 et 2007 — Lecture (4^{th} academic year - 24 hours) "Analyse de Fourier" (Fourier Analysis).

2000 — Lecture (5^{th} academic year - 12 hours) "Équations de Navier-Stokes, II" (Navier-Stokes equations, part II).

Supervising students

2000-16 — Advisor for Master 1 (4^{th} academic year) students: research projects.

2009-10 — Advisor for 3 students of the "École Normale Supérieure de Lyon".

Teaching mobility

2005 and 2010 — One week in Ulm (Germany) with Erasmus (european project for teacher/student mobility).

1995-1998 — Teaching assistant in Ulm (Germany).

Tutorials:
Functional analysis, linear algebra, multivariable calculus, differential equations.

1993-1995 — Teaching assistant in Besançon (France): tutorials for 1^{st} and 2^{nd} year students.

1.4 Collaborations - Talks

Invitations abroad

Oct. 2014-June 2015	8 months at the Australian National University (ANU), in Canberra (Australia).
May 2013	2 weeks at ICMAT, Madrid (Spain).
June 2012	2 weeks at Temple University, Philadelphia (Pennsylvania - USA).
Mar.-Apr. 2012	3 weeks at the University of Missouri (Columbia, USA).
Oct. 2011-Mar. 2012	One semester as invited professor at the Technische Universität Darmstadt (Germany).
Aug.-Sept. 2011	6 weeks at the ANU, Canberra (Australia).
Avr. 2010	2 weeks at the University of Missouri (Columbia, USA).
Jan.-Feb. 2010	"Research in pairs", 3 weeks at the MFO (Oberwolfach, Germany).
May 2009	1 month invitation "Luftbrückendank Foundation Scholarship" at the TU Berlin (Germany).
Apr. 2008	2 weeks invitation (UMC Miller Scholarship) at the University of Missouri (USA).
Nov. 2005	1 month invitation (UMC Miller Scholarship) at the University of Missouri (USA).
Apr. 2003	1 month at the ANU, Canberra (Australia).
Feb.-Mar. 2003	2 months (UMC Miller Scholarship) at the University of Missouri (USA).
June-Dec. 2002	6 months at the ANU, Canberra (Australia).
May 2000	1 month at the University of Puerto-Rico, San-Juan (USA).

Invited collaborators

Jan.-Feb. 2016	Tom ter Elst, prof. at the University of Auckland (New Zealand), invited one month at the Mathematics Institut in Marseille (I2M).
April 2014	Wolfgang Arendt, prof. at the Universität Ulm (Germany), invited 3 weeks at the I2M.
June 2009	Dorina Mitrea and Marius Mitrea, prof. at the University of Missouri (Columbia, USA), invited one month in Marseille.
Dec. 2006 - Jan. 07	Steve Hofmann, prof. at the University of Missouri (Columbia, USA), invited one month in Marseille.
June 2004	Marius Mitrea, prof. at the University of Missouri (Columbia, USA), invited one month in Marseille.

International conferences since 2010

Oct. 2016	Euro-Maghreb Workshop (http://euromaghreb10.math.kit.edu), in Blaubeuren (Allemagne):*The Dirichlet-to-Neumann problem associated with the Stokes operator.*
Sept. 2016	"Workshop on Interactions of Harmonic Analysis and Operator Theory" organised by the London Mathematical Society, in Birmingham (UK):*First order approach to L^p estimates for the Stokes operator on Lipschitz domains.*
Juin 2016	"Recent Advances in Hydrodynamics" at the BIRS, Banff (Canada): *Navier-Stokes equations with time-dependent boundary conditions.*
May 2016	"Singular Integrals and Partial Differential Equations" in Helsinki (Finland): *First order approach to L^p estimates for the Stokes operator on Lipschitz domains.*
Sept. 2015	Workshop "Mathflows", in Porquerolles (France): *Navier-Stokes equations with time-dependent boundary conditions.*
Dec. 2014	"8^{th} Australian-New Zealand Mathematics Convention", in Melbourne (Australia): *Navier-Stokes equations with time-dependent boundary conditions.*

May 2014	"Vorticity, Rotation and Symmetry III" at the CIRM: *The Navier-Stokes system with time-dependent Robin-type boundary conditions.*
Mar. 2014	Workshop "Maxwell-Stefan meets Navier-Stokes-Modeling and Analysis of Reactive Multi-Component Flows", in Halle (Germany): *The Navier-Stokes system with time-dependent Robin-type boundary conditions.*
Jan. 2014	"Fluid-Snow Workshop", at La Clusaz: *Traces of vector fields in non smooth domains.*
Oct. 2013	"Analyse fonctionnelle, harmonique et probabilités" (Functional analysis, harmonique analysis and probability), in Lyon: *Traces et inégalité de Poincaré dans des domaines spéciaux Lipschitz.*
June 2013	Symposium "Operator semigroups meet complex analysis, harmonic analysis and mathematical physics", inHerrnhut (Allemagne): *The Hodge Laplacian with Robin-type boundary conditions in bounded Lipschitz domains.*
Feb. 2013	Workshop "Geophysical Fluid Dynamics", at the MFO (Oberwolfach, Germany) : *Hodge-Navier-Stokes equations with Robin boundary conditions in bounded Lipschitz domains.*
Oct. 2012	Workshop "Mathflows", in Porquerolles: *Robin boundary conditions for the Navier-Stokes system in Lipschitz domains.*
July 2012	Workshop "Complex fluids", in Darmstadt (Germany): *The Navier-Stokes-Coriolis system in (unbounded) domains.*
June 2012	"Euro-Maghrebian Workshop", in Lecce (Italy): *The divergence theorem involving the pointwise nontangential trace.*
Oct. 2011	"Evolution equations: randomness and asymptotics" in Bad Herrenalb (Germany): *Maximal regularity in tent spaces.*
May 2011	EPSRC Gregynog Workshop "Workshop on Analytic and Computational Techniques in Spectral Theory and Related Topics" in Newtown (Powys - UK): *Maximal regularity in tent spaces.*
May 2011	"Vorticity, Rotation and Symmetry II" at the CIRM: *Navier-Stokes equations in bounded domains: various boundary conditions.*
June 2010	13^{th} Internet Seminar final workshop in Kácov (Czech Republic): *The Stokes operator in bounded domains.*
Mar. 2010	Workshop "Mathematical Theory for Navier-Stokes Equations in Various Domains", in Sapporo (Japan): *Navier-Stokes equations in non smooth domains.*
•	**in research seminars** since 2010
2016	Universities of Bordeaux, Aix-Marseille, IMJ (Paris 6-Paris 7), Orsay (Paris 11).
2015	Australian National University, Canberra (Australia).
2013	IMJ (Paris 6-Paris 7).
2012	University of Karlsruhe (Germany), IMJ (Paris 6-Paris 7).
2011	Universities of Caen, Aix-Marseille, Ulm (Germany), Dresden (Germany).
2010	Universities of Konstanz, Ulm (Germany).

2 Research Activities

2.1 Realisations

2.1.1 Maximal regularity

The problem is the following: given an unbounded operator A on a functional space Y, one considers the Cauchy problem

$$\partial_t u + Au = f, \quad u(0) = 0, \tag{1}$$

for f in a function space X. The question is then to find conditions on A and/or X so that (1) has a solution u with the property that $\partial_t u$ and Au both belong to the space X.

[A21], **[A20]** Autonomous L^p maximal regularity (A does not depend on t): sectorial operators with bounded imaginary powers, $X = L^p(0,T;Y)$.

[A22], **[A19]**, **[A17]**, **[A18]**, **[N2]**, **[A1]** Non autonomous L^p maximal regularity (A depends on t), $X = L^p(0,T;Y)$.

[A6], **[A5]**, **[S2]** Maximal regularity in tent spaces $X = T^{p,2}$ ($Y = L^2$) for operators in divergence form.

2.1.2 Navier-Stokes equations

Those equations have the following form:

$$\begin{aligned} \partial_t u - \Delta u + (u\cdot\nabla)u + \nabla p &= 0 \quad \text{in } (0,\infty)\times\mathbb{R}^d \\ \nabla\cdot u &= 0 \quad \text{in } (0,\infty)\times\mathbb{R}^d \\ u(0) &= u_0 \quad \text{in } \mathbb{R}^d, \end{aligned} \tag{2}$$

where $u : (0,\infty)\times\mathbb{R}^d \to \mathbb{R}^d$ is the velocity and $p : (0,\infty)\times\mathbb{R}^d \to \mathbb{R}$ represents the pressure of the fluid, $u_0 : \mathbb{R}^d \to \mathbb{R}^d$ being the initial velocity which depends only on the space variable. The critical space in d dimensions can be viewed as the space where the linear part of the equation has "the same weight" as the nonlinear part; for instance, the Lebesgue space L^d or the Sobolev space $H^{\frac{d}{2}-1}$.

[N1], **[A16]**, **[A15]**, **[C4]** Uniqueness of mild solutions in L^d in the whole space (first proved by Furioli, Lemarié-Rieusset and Terraneo, shorter proof using maximal regularity in [N1]), and in Lipschitz domains in dimension 3 and above.

[A14], **[A13]**, **[R4]**, **[A4]**, **[S3]**, **[S3]** Existence of solutions in $H^{\frac{1}{2}}$ in the case of bounded Lipschitz domains and any open sets (bounded or not) in dimension 3, Dirichlet boundary conditions.

[A11], **[A10]**, **[A4]**, **[S3]** Existence of solutions in L^3 in the case of bounded Lipschitz domains Ω in dimension 3, "Navier-slip" (or "Hodge" : $\nu\cdot u = 0$ and $\nu\times\operatorname{curl} u = 0$ on $\partial\Omega$) boundary conditions, writing the nonlinear part as $(u\cdot\nabla)u = -u\times\operatorname{curl} u + \frac{1}{2}\nabla|u|^2$, using results proved in [A12].

[A8], **[A4]** Existence of solutions in L^3 in dimension 3 in bounded Lipschitz domains with Neumann boundary conditions.

[A3], **[R3]** Study of the Navier-Stokes-Coriolis system in bounded or unbounded domains.

[A2] Navier-Stokes equations in Lipschitz domains Ω with non autonomous boundary conditions: $\nu(x)\cdot u(t,x) = 0$ et $\nu(x)\times\operatorname{curl} u(t,x) = \beta(t,x)u(t,x)$ for $t > 0$ and $x \in \partial\Omega$ where $\beta(t,x)$ is a positive symmetric matrix (uniformly in $t > 0$ and $x \in \partial\Omega$) such that $\nu(x)$ is an eigenvector for all $x \in \partial\Omega$.

2.1.3 Other operators/pde's

[A12], [S1] Study of Bogovskiĭ type operators to find a right inverse for the divergence or other differential forms on Riemannian manifolds, in Lipschtiz domains.

[A9] Lamé operator in bounded Lipschitz domains.

[A7] Extension of the results in [A11]: Riesz transforms for the Hodge Laplacian in L^p, in the case of bounded Lipschitz domains.

[C3] Study of the Poisson integral in the case of bounded domains with the uniform exterior ball condition (more or less Lipschitz domains for which the singularities are on the convex parts of the boundary)

[C2], [R2] elementary proofs of existence of traces on the boundary $\partial\Omega$ for fonctions in $H^1(\Omega)$, and vector fields $u \in L^2(\Omega, \mathbb{R}^3)$ such that $\operatorname{div} u \in L^2(\Omega)$, $\operatorname{curl} u \in L^2(\Omega, \mathbb{R}^3)$ and $\nu \cdot u = 0$ on $\partial\Omega$ (or $\nu \times u = 0$ on $\partial\Omega$).

2.1.4 Focus on the years 2010-2016

- References [A4], [A3], [A11], [A10], [A8], [R4], [R3], [C2], [A2] [S3]: The last 5 years, I have been focusing more precisely on the (linear) Stokes (or Stokes-Coriolis) system with various boundary conditions in bounded or unbounded Lipschitz domains. Once the properties of the linear problem are well understood, classical fixed point theorems allow to find global solutions for the nonlinear Navier-Stokes system for small initial conditions. The Stokes operator has very different properties from the Laplacian in the case of non smooth domains.
- Reference [L1]: This book (6 chapters) written in collaboration with Dorina Mitrea, Irina Mitrea and Marius Mitrea, mainly deals with issues in analysis that permit construction of a metric which is compatiblequantitatively, topologically or algebraicallywith a given setting. Some classical results in the book are: the Aleksandrov-Uryson metrization theorem (point-set topology), the Macas-Segovia metrization theorem (harmonic analysis), the Aoki-Rolewicz normality theorem (functional analysis), and the Birkhoff-Kakutani metrization theorem (topological group theory). More precisely, we show how classical theorems such as the open mapping theorem, the closed graph theorem and the uniform boundedness principle can be extended in a more general setting than complete metric spaces.

2.2 In progress

[S2] Application of the results of [A6] and [A5] to study non autonomous Cauchy problems in divergence form, using singular integrals on tent spaces (à la Coifman, Meyer, Stein), in collaboration with Pascal Auscher and Pierre Portal.

[S1], [C1] In collaboration with Alan M$^{\text{c}}$Intosh (MSI - ANU): extension of previous results obtained in [A11] in the more general case of very weakly Lipschitz domains. In particular, we prove bounded holomorphic functional calculus for the Dirac operator $d + \underline{\delta}$ in spaces L^p for p in an interval containing 2.

[R1] In collaboration with Tom ter Elst (University of Auckland, New Zeland), short and simple proof (1 page) of convergence of eigenvalues of unbounded positive self-adjoint operators with compact resolvents, the resolvents converging uniformly.

[P1] With Tom ter Elst, after studying different Stokes operators (in non smooth domains, Dirichlet boundary conditions), we show the convergence of the resolvents of these Stokes operators in the following two cases:

$$(i)\ \Omega_n \subset \Omega_{n+1} \text{ for all } n \text{ and } \bigcup_n \Omega_n = \Omega; \qquad (ii)\ \Omega_{n+1} \subset \Omega_n \text{ for all } n \text{ and } \bigcap_n \Omega_n = \Omega.$$

[P2] Thanks to the Dirichlet-to-Neumann operator associated with the Stokes operator, one can compare the eigenvalues of that operator with Dirichlet of Neumann boundary conditions. The situation is the same as for the Laplacian, as proved by Friedlander: the $(k+1)^{\text{th}}$ eigenvalue associated with homogeneous Neumann boundary conditions is strictly less than the k^{th} eigenvalue associated with homogeneous Dirichlet boundary conditions.

3 Publications

Available on the webpage: http://www.i2m.univ-amu.fr/~monniaux/doku.php?id=publications

Book

[L1] D. Mitrea, I. Mitrea, M. Mitrea, and S. Monniaux. *Groupoid metrization theory.* Applied and Numerical Harmonic Analysis. Birkhäuser/Springer, New York, 2013. With applications to analysis on quasi-metric spaces and functional analysis.

International Refereed Journals

[A1] W. Arendt and S. Monniaux. Maximal regularity for non-autonomous Robin boundary conditions. *Math. Nachr.*, 283(11-12):1325–1340, 2016.

[A2] S. Monniaux and E.M. Ouhabaz. The Navier-Stokes system with time-dependent Robin-type boundary conditions. *J. Math. Fluid Mech.*, 17:707–722, 2015.

[A3] M. Hieber and S. Monniaux. Well-posedness results for the Navier-Stokes equations in the rotational framework. *Discrete Contin. Dyn. Syst.*, 33(11-12):5143–5151, 2013.

[A4] S. Monniaux. Various boundary conditions for Navier-Stokes equations in bounded Lipschitz domains. *Discrete Contin. Dyn. Syst. Ser. S*, 6(5):1355–1369, 2013.

[A5] P. Auscher, C. Kriegler, S. Monniaux, and P. Portal. Singular integral operators on tent spaces. *J. Evol. Equ.*, 12(4):741–765, 2012.

[A6] P. Auscher, S. Monniaux, and P. Portal. The maximal regularity operator on tent spaces. *Commun. Pure Appl. Anal.*, 11(6):2213–2219, 2012.

[A7] S. Hofmann, M. Mitrea, and S. Monniaux. Riesz transforms associated with the Hodge Laplacian in Lipschitz subdomains of Riemannian manifolds. *Ann. Inst. Fourier (Grenoble)*, 61(4):1323–1349 (2012), 2011.

[A8] M. Mitrea, S. Monniaux, and M. Wright. The Stokes operator with Neumann boundary conditions in Lipschitz domains. *J. Math. Sci. (N. Y.)*, 176(3):409–457, 2011. Problems in mathematical analysis. No. 57.

[A9] M. Mitrea and S. Monniaux. Maximal regularity for the Lamé system in certain classes of non-smooth domains. *J. Evol. Equ.*, 10(4):811–833, 2010.

[A10] M. Mitrea and S. Monniaux. The nonlinear Hodge-Navier-Stokes equations in Lipschitz domains. *Differential Integral Equations*, 22(3-4):339–356, 2009.

[A11] M. Mitrea and S. Monniaux. On the analyticity of the semigroup generated by the Stokes operator with Neumann-type boundary conditions on Lipschitz subdomains of Riemannian manifolds. *Trans. Amer. Math. Soc.*, 361(6):3125–3157, 2009.

[A12] D. Mitrea, M. Mitrea, and S. Monniaux. The Poisson problem for the exterior derivative operator with Dirichlet boundary condition in nonsmooth domains. *Commun. Pure Appl. Anal.*, 7(6):1295–1333, 2008.

[A13] M. Mitrea and S. Monniaux. The regularity of the Stokes operator and the Fujita-Kato approach to the Navier-Stokes initial value problem in Lipschitz domains. *J. Funct. Anal.*, 254(6):1522–1574, 2008.

[A14] S. Monniaux. Navier-Stokes equations in arbitrary domains: the Fujita-Kato scheme. *Math. Res. Lett.*, 13(2-3):455–461, 2006.

[A15] S. Monniaux. Unicité dans L^d des solutions du système de Navier-Stokes: cas des domaines lipschitziens. *Ann. Math. Blaise Pascal*, 10(1):107–116, 2003.

[A16] S. Monniaux. On uniqueness for the Navier-Stokes system in 3D-bounded Lipschitz domains. *J. Funct. Anal.*, 195(1):1–11, 2002.

[A17] M. Hieber and S. Monniaux. Pseudo-differential operators and maximal regularity results for non-autonomous parabolic equations. *Proc. Amer. Math. Soc.*, 128(4):1047–1053, 2000.

[A18] M. Hieber and S. Monniaux. Heat-kernels and maximal L^p-L^q-estimates: the non-autonomous case. *J. Fourier Anal. Appl.*, 6(5):467–481, 2000.

[A19] S. Monniaux and A. Rhandi. Semigroup methods to solve non-autonomous evolution equations. *Semigroup Forum*, 60(1):122–134, 2000.

[A20] S. Monniaux. A new approach to the Dore-Venni theorem. *Math. Nachr.*, 204:163–183, 1999.

[A21] S. Monniaux. A perturbation result for bounded imaginary powers. *Arch. Math. (Basel)*, 68(5):407–417, 1997.

[A22] S. Monniaux and J. Prüss. A theorem of the Dore-Venni type for noncommuting operators. *Trans. Amer. Math. Soc.*, 349(12):4787–4814, 1997.

Proceedings (with reviews)

[C1] A. M^{c}Intosh and S. Monniaux. First Order Approach to L^p Estimates for the Stokes Operator on Lipschitz domains. In Tao Qian Luigi G. Rodino, editor, *Mathematical Analysis, Probability and Applications Plenary Lectures ISAAC 2015, Macau, China*, volume 177 of *Springer Proceedings in Mathematics & Statistics*, pages 55–75, 2016.

[C2] S. Monniaux. Traces of non regular vector fields in Lipschitz domains. In W. Arendt R. Chill Y. Tomilov, editor, *Operator Semigroups meet Complex Analysis, Harmonic Analysis and Mathematical Physics (Herrnhut, 2014)*, volume 250 of *Oper. Theory: Adv. Appl.*, pages 343–351, 2015.

[C3] D. Mitrea, M. Mitrea, and S. Monniaux. Weighted Sobolev space estimates for a class of singular integral operators. In *Around the research of Vladimir Maz'ya. III*, volume 13 of *Int. Math. Ser. (N. Y.)*, pages 179–200. Springer, New York, 2010.

[C4] S. Monniaux. Maximal regularity and applications to PDEs. In *Analytical and numerical aspects of partial differential equations*, pages 247–287. Walter de Gruyter, Berlin, 2009.

[C5] W. Arendt and S. Monniaux. Domain perturbation for the first eigenvalue of the Dirichlet Schrödinger operator. In *Partial differential operators and mathematical physics (Holzhau, 1994)*, volume 78 of *Oper. Theory Adv. Appl.*, pages 9–19. Birkhäuser, Basel, 1995.

Comptes Rendus de l'Académie des Sciences

[N1] S. Monniaux. Uniqueness of mild solutions of the Navier-Stokes equation and maximal L^p-regularity. *C. R. Acad. Sci. Paris Sér. I Math.*, 328(8):663–668, 1999. Original result.

[N2] M. Hieber and S. Monniaux. Noyaux de la chaleur et estimations mixtes L^p-L^q optimales: le cas non autonome. *C. R. Acad. Sci. Paris Sér. I Math.*, 328(3):233–238, 1999. Collection of the results of [A17] and [A18].

Submitted

[S1] A. M^{c}Intosh and S. Monniaux. Hodge-Dirac, Hodge-Laplacian and Hodge-Stokes operators in L^p spaces on Lipschitz domains. 38 pages, available at: https://arxiv.org/pdf/1608.01797v1.pdf, 2015.

[S2] P. Auscher, S. Monniaux, and P. Portal. On existence and uniqueness for non-autonomous parabolic Cauchy problems with rough coefficients. Available at: https://arxiv.org/pdf/1511.05134.pdf, 2015.

[S3] S. Monniaux and Z. Shen. Stokes problems in irregular domains with various boundary conditions. Accepted for publication as a chapter of the book: *Handbook of Mathematical Analysis in Mechanics of Viscous Fluids*, Springer ed., 2016.

Reports

[R1] T. ter Elst and S. Monniaux. Convergence of eigenvalues. *Ulmer Seminare*, 20:1, 2016.

[R2] S. Monniaux. A three line proof for traces of H^1 functions on special Lipschitz domains. *Ulmer Seminare*, 19:339–340, 2014.

[R3] S. Monniaux. Le système de Navier-Stokes avec force de Coriolis dans un demi-espace à bord rugueux. *Actes du colloque EDP-Normandie Caen 2013*, pages 75–86, 2014.

[R4] S. Monniaux. On the Navier-Stokes equations in unbounded domains. *Ulmer Seminare*, 17:237–241, 2012.

[R5] S. Monniaux. Régularité maximale et équations de Navier-Stokes. Habilitation Thesis, Université Paul Cézanne, 2007.

[R6] S. Monniaux. Générateur analytique et régularité maximale. PhD Thesis, Université de Franche-Comté, 1995.

In preparation

[P1] T. ter Elst and S. Monniaux. Stokes operators and domain perturbation. In preparation, 2016.

[P2] T. ter Elst and S. Monniaux. Eigenvalue estimates and the Dirichlet-to-Neumann operator. In preparation, 2016.