

## El Maati OUHABAZ

Professor  
Institut de Mathématiques,  
Université de Bordeaux  
351, Cours de la Libération  
33405 Talence. France.

### List of publications

#### Book:

*Analysis of Heat Equations on Domains*, London Math. Soc. Monographs, Vol. 31.  
Princeton Univ. Press, Octobre 2004. <http://press.princeton.edu/titles/7904.html>

#### Articles published in international Journals:

- [1]  $L^\infty$ -contractivity of semigroups generated by sectorial forms, *J. London Math. Soc.* (2) 46 (1992) 529-542
- [2] Semi-groupes sous-Markoviens engendrés par des opérateurs matriciels, *Math. Ann.* 296 (1993) 667-676
- [3] Holomorphic semigroups and Schrödinger equations, *Operator Theory, Advances and Applications*, Vol 70 (1994) 137-141
- [4] Gaussian estimates and holomorphy of semigroups, *Proc. Amer. Math. Soc.* Vol. 123, no 5 (1995) 1465-1474
- [5] Second-order elliptic operators with essential spectrum  $[0, \infty)$  on  $L^p$ , *Comm. PDE*, 20 (5, 6) (1995) 763-773
- [6] Invariance of closed convex sets and domination criteria for semigroups, *Potential Analysis*, 5 (1996) 611-625
- [7] Some spectral properties of recurrent semigroups, *Arch. der Math.* Vol. 66 (1996) 233-242 (with I. McGillivray).
- [8] The Feller property for absorption semigroups, *J. Functional Analysis*, Vol 138, no 2 (1996) 351-378 (with P. Stollmann, K.Th. Sturm and J. Voigt)
- [9] Scattering for Schrödinger operators with magnetic fields, *Math. Nachr.* 185 (1997) 49-58 (with M. Demuth).
- [10] Growth and asymptotics of perturbed recurrent semigroups, *Semigroup Forum*, Vol 55 (1997) 49-58
- [11] On the spectral function of some higher order elliptic or degenerate-elliptic operators, *Semigroup Forum*, Vol. 57 (1998) 305-314
- [12] Stability of the essential spectrum of second-order complex elliptic operators, *J. Reine Angew. Math.* 500 (1998) 113-126 (with P. Stollmann).
- [13] Existence of bounded invariant solutions for absorption semigroups, dans " *Differential Equations, Asymptotic Analysis and Mathematical Physics*", *Mathematical Research*, Vol 100 (1997) 226-241 (with I. McGillivray)

- [14] Complex multiplicative perturbations of elliptic operators: Heat kernel bounds and holomorphic functional calculus, *Diff. Integ. Equations*, Vol 12, n<sup>o</sup> 3 (1999) 395-418 (with X.T. Duong).
- [15] Absence de la  $L^\infty$ -contractivité pour les semi-groupes associés aux opérateurs elliptiques complexes sous forme divergence, *Potential Analysis* 2 (2000) 169-189 (with P. Auscher, L. Barthelemy and Ph. Bénylan)
- [16] Heat kernels of multiplicative perturbations: Hölder estimates and Gaussian lower bounds, *Indiana Univ. Math. J.* Vol 47, n<sup>o</sup> 4 (1998) 1481-1495
- [17]  $L^p$  contraction semigroups for vector valued functions, *Positivity*, **3** (1999) 83-93.
- [18] Gaussian upper bounds for heat kernels of a class of nondivergence operators, *Proc. Center For Maths and Appl. Australian National University, Canberra*. Vol. 41 (2003) 35-45 (with X.T. Duong).
- [19] Heat kernel bounds and spectral multipliers on spaces of polynomial volume growth and irregular domains, (manuscript non publié, en collaboration with X.T. Duong).
- [20] Gaussian estimates and  $L^p$ -boundedness of Riesz means, *Journal of Evolution Equations* 2 (2002) 299-317 (with G. Carron and Th. Coulhon).
- [21] The spectral bound and principal eigenvalues of Schrödinger operators on Riemannian manifolds, *Duke Math. J.* Vol. 110, No 1 (2001) 1- 35.
- [22] Plancherel type estimates and sharp spectral multipliers, *J. Funct. Analysis* 196, n<sup>o</sup> 2 (2002) 443- 485 (with X.T. Duong and A. Sikora).
- [23] Gaussian upper bounds for heat kernels of second-order elliptic operators with complex coefficients on arbitrary domains, *J. Operator Theory* 51 (2004) 335-360.
- [24] Negative discrete spectrum of perturbed multivortex Aharonov-Bohm hamiltonians, *Ann. Henri Poincaré* 5 (2004) 979-1012 (with M. Melgaard and G. Rozenblum).
- [25] Sharp Gaussian bounds and  $L^p$ -growth of semigroups associated with elliptic and Schrödinger operators, *Proc. Amer. Math. Soc.* Vol. 134, no 12 (2006) 3567-3575.
- [26] Comportement des noyaux de la chaleur des opérateurs de Schrödinger et applications à certaines équations paraboliques semi-linéaires, *J. Func. Analysis* 238 (2006) 278-297.
- [27] Stable determination of a semilinear term in a parabolic equation, *Comm. Pure and App. Anal.* Vol. 5, no 3 (2006) 447-462 (with M. Choulli and M. Yamamoto).
- [28] Endpoint estimates for Riesz transforms of magnetic Schrödinger operators, *Ark. för Mat.* 44 (2006) 261-275 (with X.T. Duong and L. Yan).
- [29] Sharp estimates for intrinsic ultracontractivity on  $C^{1,\alpha}$ -domains, *Manus. Mat.* 122 (2007) 229-297 (with F.Y. Wang).
- [30] Lieb-Thirring estimates for non-self-adjoint Schrödinger operators. *J. Math. Phys.* 49, no 9 (2008) (with V. Bruneau).
- [31] A spectral multiplier theorem for non-self-adjoint operators. *Trans. Amer. Math. Soc.* 361 (2009) 6567-6582.
- [32] Remarks on the Cwikel-Lieb-Rozenblum and Lieb-Thirring estimates for Schrödinger operators on Riemannian manifolds, *Acta Appl. Math.* 110 (2010) 1449-1459. (with C. Poupaud).

- [33] Maximal regularity for non-autonomous Schrödinger type equations, *J. Diff. Equations* 248 (2010) 1668-1683 (with C. Spina).
- [34] Partial Gaussian bounds for degenerate differential operators, *Potential Analysis* 35 (2011) 175-199 (with A.F.M. ter Elst).
- [35] Long time behavior of heat kernels of operators with unbounded drift terms, *J. Math. Anal. Appl.* 1 (2011) 170-179 (with G. Metafuno and D. Pallara).
- [36] Riesz transforms of Schrödinger operators on Riemannian manifolds, *J. Geom. Analysis*. no. 4, 1108-1136 (2012) (with J. Assaad).
- [37] Kernel and eigenfunction estimates for some second order elliptic operators, *J. Math. Anal. Appl.* 387 (2012) 799-806 (with A. Rhandi).
- [38] Exact observability, square functions and spectral theory, *J. Functional Analysis* 262 (2012) 2903-2927 (with B. Haak).
- [39] Uniqueness properties of degenerate elliptic operators, *Journal of Evol. Eqs* 12 no. 3, 647-673. (2012) (with Robinson, Derek W).
- [40] Riesz transforms of some parabolic operators, *Proc. CMA, The Australian National University*, Vol. 45 (2013) 115-124. (with C. Spina).
- [41] Partial spectral multipliers and partial Riesz transforms for degenerate operators, *Revista Math. Iberoamericana* 29 (2013) 691-713 (with A.F.M. ter Elst).
- [42] Restriction estimates via the derivatives of the heat semigroup and connexion with dispersive estimates, *Math. Res. Lett.* 20 (2013), no. 6, 1047-1058 (with F. Bernicot).
- [43] Maximal regularity for non-autonomous second order Cauchy problems, *Integr. Equ. Oper. Theory* 78 (2014), 427-450 (with D. Dier).
- [44] Invariance of convex sets for non-autonomous evolution equations governed by forms, *J. London Math. Soc.* (2) 89(2014) 903-916 (with W. Arendt and D. Dier).
- [45] Maximal regularity for evolution equations governed by non-autonomous forms, *Advances in Diff. Eqs.* vol. 19, n.11-12 (2014) 1043-1066 (with W. Arendt, D. Dier and H. Laasri).
- [46] Convergence of the Dirichlet-to-Neumann operator on varying domains, *pari dans Operator Semigroups Meet Complex Analysis, Harmonic Analysis and Mathematical Physics, Operator Theory: Advances and Applications*, Birkhauser. Vol. 250 (2015) 147-154 (with A.F.M. ter Elst).
- [47] Analysis of the heat kernel of the Dirichlet-to-Neumann operator, *J. Func. Analysis* 267 (2014)4066-4109 (with A.F.M. ter Elst).
- [48] Heat kernel bounds for elliptic partial differential operators in divergence form with Robin-type boundary conditions II, *Proc. Amer. Math. Soc.* Vol. 143, N. 4 2015 1635-1649 (2015) (with F. Gesztesy, M. Mitrea, R. Nichols).
- [49] Partial Gaussian bounds for degenerate differential operators II, *Ann. Sc. Norm. Super. Pisa Cl. Sci.* (5) Vol. XIV (2015), 37-81 (with A.F.M. ter Elst).
- [50] Maximal regularity for non-autonomous evolution equations, *Math. Annalen* 363 (2015), no. 3-4, 1117-1145 (with B.H. Haak).
- [51] Observations on Gaussian upper bounds for Neumann heat kernels, *Bull. Austr. Math. Soc.* (2015), no. 3, 429-439 (with M. Choulli and L. Kayser).

- [52] The Hodge-de Rham Laplacian and  $L^p$ -boundedness of Riesz transforms on non-compact manifolds, *NonLinear Analysis, TMA* 125 (2015) 78-98. (with P. Chen, J. Magniez)
- [53] Maximal regularity for non-autonomous evolution equations governed by forms having less regularity, *Arch. Math.* 105 (2015), no. 1, 79-91.
- [54] The incompressible Navier-Stokes system with time-dependent Robin-type boundary conditions, *Journal of Mathematical Fluid Mechanics* 17 (2015), no. 4, 707-722 (with S. Monniaux).
- [55] Restriction estimates, sharp spectral multipliers and endpoint estimates for Bochner-Riesz means, *J. Analyse Math.* 129 (2016), 219–283 (with P. Chen, A. Sikora and L. Yan).
- [56] Weighted restriction type estimates for Grushin operators and application to spectral multipliers and Bochner-Riesz summability, *Math. Z.* 282 (2016), no. 3-4, 663-678. (with P. Chen).
- [57] The heat kernel of a Schrödinger operator with inverse square potential, *Proc. London Math. Soc.* (3) 115 (2017) 381-410 (with K. Ishige and Y. Kabeya)
- [58] A "milder" version of Calderón's inverse problem for anisotropic conductivities and partial data, *J. Spectral Th.* 8, no 2 (2018) 435-457.
- [59] Non-autonomous right and left multiplicative perturbations and maximal regularity, *Studia Math.* 242 (2018) 1-29 (with M. Achache)
- [60] Lions' maximal regularity problem with  $H^{1/2}$ -regularity in time, *J. Diff. Eqs* 266 (2019) 3654-3678 (with M. Achache).
- [61] Dirichlet-to-Neumann and elliptic operators on  $C^{1+\kappa}$ -domains: Poisson and Gaussian bounds, *J. Differential Equations* 267 (2019), no. 7, 4224-4273 (with A.F.M. ter Elst).
- [62] Analyticity of the Dirichlet-to-Neumann semigroup on continuous functions, *J. Evolution Eqs* 19 (2019) 21-31 (with A.F.M. ter Elst).
- [63] Controllability and observability for non-autonomous evolution equations: the averaged Hautus test, *Systems Control Lett.* 133 (2019), 104524 (with B. Haak and H.C. Trung).
- [64]  $L^p$ -estimates for the heat semigroup on differential forms, and related problems, *J. Geom. Anal.* 30 (2020) 3002-3025 (with J. Magniez).
- [65] Spectral multipliers without semigroup framework and application to random walks, *J. Math. Pures Appl.* (9) 143 (2020), 162-191 (with P. Chen, A. Sikora and L. Yan).
- [66] The square root of a parabolic operator, *J. Fourier Anal. Appl.* 27 (2021), no. 3, Paper No. 59, 15 pp.
- [67] Bernstein inequalities via the heat semigroup, *Math. Ann.* (2022) in press (with R. Imekraz).
- [68] The diamagnetic inequality for the Dirichlet-to-Neumann operator, to appear in *Bull. London Math. Soc.* (with A.F.M. ter Elst).
- [69] Interpolation for analytic families of multilinear operators on metric measure spaces, to appear in *Studia Math.* (with L. Grafakos).