

Curriculum Vitae

Olivier Pironneau (www.ann.jussieu.fr/pironneau)

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Education

1966-68 : *Ecole Polytechnique*.
1968-69 : DEA (french master) in Mathematical econometry at INSTN.
1969-70 : *Master* , University of California, *Berkeley* (UC-Berkeley)
1970-71 : *PhD* , UC-Berkeley (with E. Polak, EECS): Optimisation and Control.
1972-73 : *Post-Doc* U. of Cambridge, UK. with Sir James Lighthill (DAMTP).
1974-76 : *Thèse d'Etat* at Université Paris VI with G. Duvaut and J.L. Lions : Shape Optimisation in Fluid Mechanics.

Present Positions

- Professeur classe exceptionnelle at *Université Pierre et Marie Curie*.
- Member of the scientific council of *Université Pierre et Marie Curie*.
- President of CSCI (strategic committee for intensive computing)
- Member of Académie des Sciences

Past Positions

1969 - 71 : “Research assistant at the University of California”, Berkeley.
1972 - 74 : Post-Doc, University of Cambridge, UK, c/o Sir James Lighthill.
1974 - 78 : Research Engineer at IRIA (INRIA).
1979 - 84 : Prof. 2nd class at *Université Paris-13* Math and Computer science dept.
1982 - 85 : Maître de conférence at *Ecole Polytechnique* (part time).
1984 - 92 : Professeur 1^{ère} classe at *Université Paris VI*, dept d’analyse numérique.
1979 - 91 : Scientific Head of project Menusin at INRIA (part time).
1991 - 96 : Scientific Advisor at INRIA (part time).
1997 - 98 : External Collaborator at CNES (part time).
1991 - 2001 : Director of the lab. d’analyse numérique of the Université Paris VI.
1997 - 2008 : Member of the CNE commission for Nuclear waste Disposal.
2000 - 2004 : Scientific Advisor at CSC.
1998 - 2008 : Member of the Institut Universitaire de France (IUF, 1998)

Honors

Recipient of the prize Blaise Pascal of the Académie des Sciences (1983),
Recipient of the Ordre National du Mérite (1989),
Honorary Adjunct Professor at the Université de Houston.
Recipient of the prize Marcel-Dassault of Académie des Sciences (2000)
Associate member of the Russian Academy of Sciences since 2004.

Author of 8 books and more than 300 articles. Advisor of more than 30 PhDs

Books

- O. PIRONNEAU: *Optimal shape design of elliptic systems*. Lecture notes in comp. physics. Springer 1983.
- U. FRISCH, J. KELLER, G. PAPANICOLAOU, O. PIRONNEAU ed. *Macroscopic Modeling of Turbulent flows*. Springer Proc. workshop on Turbulence, Nice, 1984.
- O. PIRONNEAU: *The finite element methods for fluids*. Wiley 1989. (in french: Méthodes d'éléments finis pour les fluides. Masson, 1988)
- B. MOHAMMADI, O. PIRONNEAU: *Analysis of the k-epsilon model*. Masson, 1994. Edition Anglaise: Wiley, 1994.
- B. LUCQUIN, O. PIRONNEAU: *Introduction au Calcul Scientifique* Masson 1997. *Introduction to Scientific Computing for Engineers* (Wiley). (Traduit du français) 1998.
- O. PIRONNEAU: *Scientific Computing in C++* Disponible sur le Web: www.ann.jussieu.fr/pironneau. (1998)
- B. MOHAMMADI, O. PIRONNEAU: *Applied Optimal Shape Design for Fluids*, Oxford University Press. (2001)
- Y. DANAILA, F. HECHT, O. PIRONNEAU: *Simulation numérique en C++*, Dunod. (2003)
- Y. ACHDOU, O. PIRONNEAU: *Numerical Methods for Option Pricing and Calibration* (SIAM press, 2005)

Important or Recent Publications

- [1972] O. PIRONNEAU, E. POLAK: On the rate of convergence of certain methods centers. *Mathematical Programming*. Vol 2, No 2. April 1972.
- [1973] O. PIRONNEAU, E. POLAK: A dual method for optimal control problems with initial and final boundary constraints. *SIAM J. Control*. Vol 11. No 3 August 1973.
- [1974] O. PIRONNEAU, D. KATZ: Optimal swimming of flagellated micro-organisms. *J. Fluid Mech*. Vol 66 part] p391-415 (1974).
- [1978] A. MARROCCO, O. PIRONNEAU: Optimum design with Lagrangian finite elements. *Comp. Meth. in Appl. Math. and Eng*. Vol.15 No.3 p277-308 (1978).
- [1979] R. GLOWINSKI, O. PIRONNEAU: Numerical methods for the first biharmonic problem. *SIAM Review* Vol 21 No 2, p167-212 (1979).
- [1980] R. GLOWINSKI, J. PERIAUX, O. PIRONNEAU: An efficient preconditioning scheme for iterative numerical solutions of partial differential equations. *Appl. Math. Modelling*. Vol.4 p187-192 June 1980.
- [1982] O. PIRONNEAU: On the transport diffusion algorithm and its application to the Navier-Stokes equations. *Numer. Math*. 38, p309-332 (1982).
- [1985] D. McLAUGHIN, G. PAPANICOLAOU, O. PIRONNEAU: Convection of micro-structures. *SIAM numer. anal.*(1985)
- [1986] O. PIRONNEAU : Numerical modelling of turbulent flows with two scales. *J. Theoretical and Applied Mech*. p95-107

- [1987] F. ELDABAGHI, O. PIRONNEAU, J. PERIAUX, G. POIRIER: 2D/3D finite element solution of Euler equations with stream vector correction. *Int J. for Numer Meth. in Fluids* 7, 1191-1209
- [1988] G. ARUMUGAM, O. PIRONNEAU: On the problem of ribbles, *J. Optimal Control and Applications*.
- [1989] C. BEGUE, B. CARDOT, O. PIRONNEAU: Simulation of turbulence with transient mean. *Int J. Numer Meth. in Fluid* 1990.
- [1989] O. PIRONNEAU, J. RAPPAZ: Numerical analysis for compressible viscous isentropic stationary flows. *Impact* vol. 1, 1989.
- [1989] S. GOPALSAMI, O. PIRONNEAU: C^1 interpolation of C^0 finite element surfaces. (Inria report 1989).
- [1990] M. DERRICO, O. PIRONNEAU: The incompressible Navier-Stokes eqs with extremely flat elements in the boundary layers. *Int J. Num. Meth. Heat Fluid flow*. Vol 1, p171-184.
- [1991] R. GLOWINSKI, O. PIRONNEAU: Finite Element Methods for Navier-Stokes equations *Ann. Rev. Fluid Mech.*
- [1991] C. BERNARDI, O. PIRONNEAU: Numerical analysis for the shallow water equations. *Comm in Partial Diff Eq.* 16(1) 59-104 (1991).
- [1992] A. BARON, O. PIRONNEAU: Optimum design of a coupled Maxwell-Stream function flow problem. *ECCOMAS proc conference, Bruxelles Sept 1992*, C. Hirsch ed.
- [1993] Y. ACHDOU, O. PIRONNEAU: The Chi Method for the Navier-Stokes equations. *IMA J. Numer Anal.* 13, 537-558.
- [1995] Y. ACHDOU, O. PIRONNEAU: A fast solver for the Navier-Stokes eqs. in the laminar regime using Mortar FEM and BEM. *SIAM J. Numer. Anal.* Vol 32, 4, pp985, 1996.
- [1996] F. HECHT, O. PIRONNEAU: Vector C++ Programming for the Finite Element Method. *Proc. Conf. On Scientific Computing for the 21 century*. J.L. Lions et al ed. (Tours 1997).
- [1998] Y. ACHDOU, O. PIRONNEAU, F. VALENTIN,: Effective boundary conditions for laminar flows over rough boundaries. *Journal of Computational Physics*, Volume 147, Issue 1, 20 November 1998, Pages 187-218.
- [1999] J.L. LIONS and O. PIRONNEAU. : Domain decomposition methods for CAD. *C. R. Acad. Sci. Paris S er. I Math.*, 328(1):73-80.
- [2000] J.L. LIONS and O. PIRONNEAU. : Non-overlapping decomposition methods for time dependent operators. *C.R.A.S*, 330 no. 10, 937-942
- [2001] F. BREZZI, J.L. LIONS, O. PIRONNEAU , Analysis of a Chimera method, *C.R. Acad. Sci. Paris*, t.332, Série I, p655-660
- [2002] C. BARDOS and O. PIRONNEAU : Sensitivities for Euler Flows accepted in *C. R. Acad. Sci.*, Paris, Ser I 335 839-845
- [2003] O. PIRONNEAU: Shape Sensitivities and Design for Fluids with Shocks *Int. J. CFD*, vol 17(14) 235-242
- [2004] B. MOHAMMADI, O. PIRONNEAU : Optimal shape Design for Fluids. *Annual Rev Fluids Mechanics* 36:255-279.
- [2005] F. HECHT and O. PIRONNEAU and A. Le Hyaric and K. Ohtsuka : *Freefem++, the book!* UPMC-LJLL Press, 2005.

- [2007] J.B. APOUNG-KAMGA and O. PIRONNEAU : Numerical Zoom and application to Nuclear Waste. *J. Comp. Physics*. Volume 224, Issue 1, 20 May 2007, Pages 403-413 .
- [2007] O. PIRONNEAU : Dupire-Like Identities for Complex Options *Compte Rendu de l'academie des sciences I*, 344,pp 127-133.
- [2007] O. PIRONNEAU : Corrected Non-Conservative Schemes *Chinese Annals of Mathematics* (to appear).
- [2008] A. CONZE and N. LANTOS and O. PIRONNEAU : The Forward Kolmogorov Equation for Two Dimensional Options *Chinese Annals of Mathematics* (to appear)
- [2008] F. HECHT, A. LOZINSKI, and O. PIRONNEAU : Numerical Zoom and the Schwarz Algorithm *Proc. Domain Decomp. 18th conf. Jerusalem M. Bercovier ed.*
- [2008] Y. ACHDOU and O. PIRONNEAU : Finite Element Methods for Option Pricing Submitted for a special volume edited by R. Cont (Columbia U. N.Y.)
- [2008] O. PIRONNEAU : Finite Element Characteristics Requiring no Quadrature Accepted in *JOMP* (Springer) M. Tabata ed.
- [2008] J. NOLEN, G. PAPANICOLAOU, O. PIRONNEAU : A Framework for Adaptive Multiscale Methods for Elliptic Problems *SIAM Multiscale Model. Simul.* 7, 171.