

List of Publications

M. Garbey

1 Publications in Refereed Journals

- [1] C.M.Brauner, W.Eckhaus, M.Garbey and A.van Harten, *A Non Linear Singular Perturbation Problem with some Unusual Features, Lecture Notes in Applied Mathematics*, Vol. 23, pp. 275-310 (1986)
- [2] C.M.Brauner, W.Eckhaus, M.Garbey and A.van Harten, *Asymptotic of a rather unusual type in a free boundary problem*, SIAM J. Math. Anal. Vol.18, 812-841 (1987)
- [3] M.Garbey, *Quasilinear hyperbolic singular perturbation problems: Study of shock layer*, *Mathematical Methods in Applied Sciences*, Vol.11, 237-252 (1989)
- [4] M.Garbey, H.G.Kaper, G.Leaf and B.J.Matkowsky, *Linear stability analysis of cylindrical flames*, Quarterly of Applied Math. Vol. 47, 691-704 (1989)
- [5] W.Eckhaus and M.Garbey, *Asymptotic analysis on large time scales for singular perturbation problems of hyperbolic type*, SIAM J. Math. Anal. Vol 21, No 4, pp867-883, (1990)
- [6] M.Garbey and D.Levine, *Massively parallel computation of conservation laws*, Parallel Computing Vol.16, 293-304 (1990)
- [7] A.Bourgeat and M.Garbey, *Computation of viscous (or nonviscous) conservation law by domain decomposition based on asymptotic analysis*, Num. Methods for PDEs, Vol.8, 127-142 (1992)
- [8] M.Garbey, H.G.Kaper, G.Leaf and B.J.Matkowsky, *Using Maple for the analysis of bifurcation phenomena in condensed phase surface combustion*, Journal of Symbolic Computation, Vol.12, 89-113 (1991)
- [9] M.Garbey, H.G.Kaper, G.Leaf and B.J.Matkowsky, *Nonlinear analysis of condensed phase surface combustion*, *European Journal of Applied Math.*, Vol.1, 73-89 (1990)
- [10] M.Garbey, H.G.Kaper, G.Leaf and B.J.Matkowsky, *Quasi-periodic waves and the transfer of stability in condensed phase surface combustion*, SIAM J.Appl.Math., Vol. 52, 384-395 (1992)
- [11] F.Desprez and M.Garbey, *Direct numerical simulation of a combustion problem on the Paragon machine*, *Parallel Computing*, Vol.21, 495-508 (1995)
- [12] M.Garbey, *Domain Decomposition to Solve Layers and Asymptotic*, *SIAM J.Scientific Computing*, Vol.15-4, 866-891 (1994)

[13] M.Garbey, *A Schwarz Alternating Procedure for Singular Perturbation Problems*, SIAM J. Scientific Computing, Vol.17, 1175-1201 (1996)

[14] M.Garbey, A.Taik and V.Volpert, *Linear Stability Analysis of Reaction Fronts in Liquids*, Quart. Appl. Math., No.2, 225-247 (1996)

[15] A.Bayliss, M.Garbey and B.J.Matkowsky, *Adaptive Pseudo-Spectral Domain Decomposition and the Approximation of Multiple Layers*, J. Comp. Phys., Vol.119, 132-141 (1995)

[16] M.Garbey and H. G. Kaper, *Heterogeneous Domain Decomposition Methods for Singular Perturbation Problems*, SIAM J. Num. Anal., Vol.34, 1513-1544 (1997)

[17] M.Garbey, A. Taik and V. Volpert, *Linear Stability of Liquid-Liquid Reaction Fronts*, Quart. Appl. Math., Vol.1, pp1-35, (1998)

[18] G.Bowden, M.Garbey, V.M.Ilyashenko, J.Pojman, S.Solovyov, *A.Taik and V.Volpert, The Effect of Convection on a Propagating Front with a Solid Product: Comparison of Theory and Experiments*, J.Chem.Phys., Vol.101B, 678-686 (1997)

[19] M.Garbey and A.El Hamidi, *Using Maple for the Analysis of Bifurcation Phenomena in Gas Combustion*, Journal of Theoretical Computer Science Vol.187, 249-262 (1997)

[20] M.Garbey and D.Tromeur Dervout, *Massively Parallel Computation of Stiff Propagating Fronts*, Combustion Theory and Modelling, Vol.1, 271-294 (1997)

[21] M.Garbey and D.Tromeur Dervout, *A new parallel solver for non periodic incompressible Navier Stokes equations using Fourier basis: application to frontal polymerization flow*, J.Comp.Phys., Vol.145, 316-331 (1998)

[22] M.Garbey, *On some Applications of the Superposition Principle with local Fourier basis*, SIAM J. Sci. Comput., Vol.22-3, pp.1087-1116, 2000

[23] G.Edjlali, M.Garbey and D.Tromeur Dervout, *Interoperability Parallel Programs Approach to simulate 3D Frontal Polymerization Processes*, J. Parallel Computing, Vol.25, pp.1161-1191, 1999.

[24] M.Garbey and H.Kaper, *Asymptotic-Numerical Study of Supersensitivity for Generalized Burgers Equations*, SIAM J. Sci. Comput., Vol.22-1, pp.368-385, 2000.

[25] M.Garbey, Yu.A.Kuznetsov, and Yu.V. Vassilevski, *A Parallel Schwarz Method for a Convection-Diffusion Problem*, SIAM J. Sci. Comput., Vol.22-3, pp.891-916,2000.

[26] M.Garbey and D.Tromeur-Dervout, *A Parallel Adaptive Coupling Algorithm for Systems of Differential Equations*, J. Comput. Phys.,Vol.161-2, pp.401-427, 2000.

[27] M.Garbey and Yu.V.Vassilevski, *A Parallel Solver for Unsteady Incompressible 3D Navier-Stokes Equations*, J. Parallel Computing, 27, pp363-389, 2001.

[28] M.Garbey and D. Tromeur Dervout, *Code Verification in Parallel Computing Environment*, VKI Lectures Series, Verification and Validation of CFD, 2000-08, <http://www.vki.ac.be/education/cfd2001.html>.

[29] M.Garbey and D. Tromeur Dervout, *Toward a Learning System in Scientific Com-*

puting, VKI Lectures Series, *Verification and Validation of CFD*, 2000-08, <http://www.vki.ac.be/educat/leser/cfd2001.html>.

[30] W.Shyy, M.Garbey, A.Appukuttan and J.Wu, *Evaluation of Richardson Extrapolation in Computational Fluid Dynamics*, Numerical Heat Transfer, Part B: Fundamentals 41 (2): pp 139-164, 2002.

[31] M.Garbey and D.Tromeur Dervout, *Parallel Algorithms with Local Fourier Basis*, J. Comput. Phys., Vol 137, No 2, pp 575-599, 2001.

[32] M.Garbey and D.Tromeur Dervout, *On some Aitken like acceleration of the Schwarz Method*, Int. J. for Numerical Methods in Fluids. 40 (12), pp 1493-1513, 2002.

[33] M.Garbey and W.Shyy, *A Least Square Extrapolation Method for improving solution accuracy of PDE computations*, J. of Comput. Physic, 186, pp1-23, 2003.

[34] N. Barberou, M.Garbey, M.Hess, M. Resch, T. Rossi, J.Toivanen and D.Tromeur Dervout, *On the Efficient Meta-computing of linear and nonlinear elliptic problems*, Journal of Parallel and Distributed Computing- special issue on grid computing, Vol63, Issue 5, pp 564-577, 2003.

[35] M.Garbey, *Acceleration of the Schwarz method for elliptic problem*, SIAM J. of Scientific Computing, Vol 26, No 6, pp 1871-1893, 2005.

[36] M.Garbey and W.Shyy, *A Least Square Extrapolation Method for the A Posteriori Error Estimate of the Incompressible Navier Stokes Problem*, Int. J. for Numerical Methods in Fluids, No 48, pp 43-59, 2005.

[37] M.Popescu, W.Shyy and M.Garbey, *Finite-Volume Treatment of Dispersion-Relation-Preserving and Optimized Prefactored Compact Schemes for Wave Propagation*, JCP, Vol 210, pp 705-729, 2005.

[38] F. Dupros, M.Garbey and W.E. Fitzgibbon, *A Filtering technique for System of Reaction Diffusion equations*, Int. J. for Numerical Methods in Fluids, Vol 52, pp1-29, 2006.

[39] C. Mony, M.Garbey and M.Muller, *Using modeling to improve models, Ecological Modeling*, (197) pp 303-319, 2006.

[40] M.Garbey and F.Pacull, *A Versatile Incompressible Navier Stokes Solver for Blood Flow Application*, Int. J. for Numerical Methods in Fluids, Vol 54, Issue 5, pp 473-496, 2007.

[41] M.Garbey, N. Sun, A. Merla, and I. Pavlidis, *Contact-Free Measurement of Cardiac Pulse Based on the Analysis of Thermal Imagery*, IEEE Transactions on Biomedical Engineering journal, vol. 54, no. 8, August 2007.

[42] I.Pavlidis, J.Dowdall, N.Sun, C. Puri, J.Fei and M.Garbey, *Interacting with Human Physiology*, Computer Vision and Image Understanding, vol. 108, no. 1-2, October/November 2007.

[43] H.Latief, E.Gabriel and M.Garbey, *Fault Tolerant Algorithms for Heat Transfer Problems*, Journal of Parallel and Distributed Computing, Volume 68 , Issue 5, pp 663-677, May 2008.

[44] M.Garbey and W.Shyy, *On Optimized Extrapolation Method for Elliptic Problems with Large Coefficient Variation*, Journal of Algorithms and Computational Technology, Vol 1 No 4, pp495-523, 2007.

[45] J. Baranger, M.Garbey and F. Oudin, *Acceleration of the Schwarz method : the Cartesian grid with irregular space step case*, SIAM J. Sci. Comput. Volume 30, Issue 5, pp. 2566-2586, 2008

[46] R. Tran-Son-Tay, M. Hwang, M. Garbey, Z. Jiang, C. K. Ozaki and S.A. Berceci, *Experiment-Based Model of Vein Graft Remodeling Induced by Shear Stress*, Ann Biomed Eng. 36(7), pp 1083-91, 2008.

[47] M.Garbey and C.Picard, *A Code-independent Technique for Computational Verification of Fluid Mechanics and Heat Transfer Problems*, Acta Mech Sin., Vol 24, pp 387-397, 2008.

[48] B.Hadri and M.Garbey, *A Fast Navier-Stokes Flow Simulator Tool for Image Based CFD*, Journal of Algorithms and Computational Technology, Vol 2 No4, pp 527-556, 2008.

[49] Scott A. Berceci, Roger Tran-Son-Tay, Marc Garbey, and Zhihua Jiang, *Hemodynamically Driven Vein Graft Remodeling: A Systems Biology Approach*, Vascular 17(S1), pp24-31, 2009.

[50] F.Pacull and M.Garbey, *On the Fourier Representation of Elastic Immersed Boundaries*, to appear in Int. J. for Numerical Methods in Fluids.

[51] H.Ltaief and M.Garbey, *A Parallel Aitken-Additive Schwarz Waveform Relaxation suitable for the Grid*, Journal of Parallel Computing, Vol 35, No 7, pp 416-428, 2009.

[52] M.Hwang, M.Garbey, S.A. Berceci and R.Tran Son tay, *Ruled-Based Simulation of Multi-Cellular Biological Systems - A Review of Modeling Techniques*, Cellular and Molecular Bioengineering, in press.

[53] M.Garbey, *Acceleration of a Schwarz Waveform Relaxation Method for Parabolic Problems*, to appear in IJMNO, 2009.

2 Publications in Conference Proceedings

[1] C.M.Brauner, W.Eckhaus, M.Garbey and A.van Harten, *On the Transition Layer along a Free boundary*, Proc. Bail 3 Conf., Boole Press, (1986)

[2] M.Garbey and D.Levine, *Parallel Computation of Conservation laws on the CM2*, SIAM Conf. on Parallel Processing (1989)

[3] M.Garbey and J.S.Scroggs, *Asymptotic Induced Numerical Methods for Conservation Laws*, Lect. Notes in Pure and Applied Math., Vol.130, pp.75-96, Dekker (1991)

[4] M.Garbey, H.G.Kaper and M.K.Kwong, *Symbolic Manipulation Software and the Study of Differential Equations*, Lect. Notes in Pure and Applied Math., Vol.130, pp.241-265, Dekker (1991)

- [5] F. Desprez and M.Garbey, *Parallel Computing of a Combustion Front*, Parallel CFD '93, Elsevier Science Publishers BV.
- [6] M.Garbey, *Domain Decomposition to solve Transition Layers*, Proc.5th Conference on Domain Decomposition Methods for PDEs, SIAM, Philadelphia, pp.293-301 (1992)
- [7] M.Garbey, A.Taik and V.Volpert, *Modelization of Instabilities for Polymerization Fronts*, Proc. ICFD, Oxford (1995)
- [8] M.Garbey, *Overlapping Domain Decomposition for Linear Singular Perturbation Problems*, Experimentation, Modelisation, Computation in flow, Turbulence and Combustion, Desideri et al. (Eds.), Vol.1, pp 123-136, John Wiley (1996)
- [9] M.Garbey and D.Tromeur Dervout, *Parallel Computation of Frontal Polymerization*, Proc Int Conf Parallel CFD 95, A.Ecer et al. (Eds.), North-Holland, pp.23-31, Caltech (1995)
- [10] M.Garbey, A.Volpert, V.Volpert and J.Pojman, *Stability of Reaction Fronts*, Proc. Conf. "Gas Phase Chemical Reactions, 100 years after Max Bodenstein" (1995)
- [11] O.Coulaud, M.Garbey and L.Viry, *A Funaro-Quarteroni Procedure for Singularly Perturbed Elliptic Boundary Value Problems*, Proc.DD9, Bergen (1996)
- [12] M.Garbey and D.Tromeur Dervout, *Computing Stiff Propagating Combustion Fronts between Wall on MIMD Architecture*, HPCN 96, Lecture Notes in Comp.Science, Springer Verlag (1996)
- [13] O.Coulaud, M.Garbey and L.Viry, *Domain Decomposition for Singularly Perturbed Elliptic Boundary Value Problems*, ECCOMAS, pp.491-499, Vol.2 (1996)
- [14] A.El Hamidi and M.Garbey, *Stability Analysis of a Polyhedral Flame Problem with Maple*, ECCOMAS, Vol.1, pp.445-452 (1996)
- [15] G.Eljlali, M.Garbey and D.Tromeur Dervout, *Coupling of a Combustion Code with an Incompressible Navier Stokes Code on MIMD Architecture*, Parallel CFD 97, Manchester, North Holland Emerson et Al Edt. pp107-114, (1997)
- [16] M.Garbey, Y.Kuznetsov and Y.Vassilevski, *On parallel Solution of Singularly Perturbed Convection-Diffusion Problems*, ECCOMAS Athens, Wiley, Papailliou et Al edt. pp 245-250, (1998)
- [17] M.Garbey and D.Tromeur-Dervout, *Adaptive Coupling and Time Marching for Metacomputing*, 10th Int. Conf. Parallel CFD98, C.A. Lin & Al editors, North-Holland publisher, pp. 93-100,1998.
- [18] M.Garbey and D.Tromeur-Dervout, *Application of Local Fourier Basis to Domain Decomposition in Combustion Problems*, 10th Int. Conf. Parallel CFD98, C.A. Lin & Al editors, North-Holland publisher, pp. 199-206, 1998.
- [19] M.Garbey, Y. Kuznetsov and Y. Vassilevski, *Parallel Schwarz Method for Convective-Diffusion Constituent of the Navier Stokes Solver*, 10th Int. Conf. Parallel CFD98, C.A. Lin & Al editors, North-Holland publisher, pp 191-198, 1998.
- [20] M.Garbey and D. Tromeur-Dervout, *Domain Decomposition with Local Fourier Basis applied to Combustion Problems*, 11th Int. Conf. on Domain Decomposition Meth-

ods DD11, Ch-H Lai & Al editors, DDM publisher, pp.242-250,1998.

[21] M.Garbey and D. Tromeur-Dervout, *Operator splitting and Domain Decomposition for Multiclustet*, (plenary lecture), 11th Int. Conf. Parallel CFD99, D. Keyes & Al editors, North Holland publisher, pp.27-36, 1999

[22] M.Garbey and D. Tromeur-Dervout, *Two Level Domain Decomposition for Multiclustet*, (plenary lecture), 12th Int. Conf. on Domain Decomposition Methods DD12, T. Chan & Al editors, pp.325-340, 2001.

[23] M.Garbey, M. Hess and Ph Piras and M. Resh and D. Tromeur-Dervout, *Numerical Algorithms and Software Tools for efficient Metacomputing*, 12th Int. Conf. Parallel CFD2000, C.B.Jenssen et al Edt. Elsevier, pp 225-232, 2000

[24] A. Ecer, M.Garbey and M. Hervin, *On the Design of Robust and Efficient Algorithms that Combine Schwarz method and Multilevel Grids*, 12th Int. Conf. Parallel CFD2000, C.B.Jenssen et al Edt. Elsevier, pp 165-172, 2000.

[25] M.Garbey and D. Tromeur-Dervout, *Aitken Schwarz Method on Regular Cartesian Grid*, (plenary lecture), 13th Int. Conf. on Domain Decomposition Methods DD13, Domain Decomposition Methods in Science and Engineering, CIMNE, Bracelona, N.Debit et Al edt, pp53-66, 2002.

[26] J. Baranger, M.Garbey and F. Oudin, *Recent Development on Aitken Schwarz Method*, 13th Int. Conf. on Domain Decomposition Methods DD13, Domain Decomposition Methods in Science and Engineering, CIMNE, Bracelona, N.Debit et Al edt, pp289-296, 2002.

[27] M.Garbey, H. Kaper and N. Romanyuka, *On Some Fast Solver for Reaction-Diffusion System*, 13th Int. Conf. on Domain Decomposition DD13, Domain Decomposition Methods in Science and Engineering, CIMNE, Bracelona, N.Debit et Al edt, pp387-394, 2002.

[28] M.Garbey, *Some Remark on Multilevel Method, Extrapolation and Code Verification*, 13th Int. Conf. on Domain Decomposition DD13, Domain Decomposition Methods in Science and Engineering, CIMNE, Barcelona, N.Debit et Al edt, pp379-386, 2002.

[29] M.Garbey and D. Tromeur-Dervout, *On some Parallel Algorithm for Metacomputing*, (invited session), Proc. ECCOMAS 2000, 17 pp, Barcelonne, 2000, CIMNE.

[30] M.Garbey and Y. Vassilevski, *Parallel computation of 3D flow of viscous Incompressible Fluid*, (invited session), Proc. ECCOMAS 2000, 9 pp, Barcelonne, 2000, CIMNE.

[31] N. Barberou, M.Garbey, M.Hess, M. Resch, T. Rossi, J.Toivanen and D.Tromeur Dervout, *Scalable Numerical Algorithms for Efficient Metacomputing of Elliptic equations*, 13th Int. Conf. on Parallel CFD 2001, North Holland Publisher, P.Wilders et Al Edt, pp 47-54, 2002.

[32] W.E.Fitzgibbon, M.Garbey and F.Dupros, *On a Fast Parallel Solver for Reaction-Diffusion problems: application to air quality simulation*, 13th Int. Conf. on Parallel CFD 2001, North Holland Publisher, P.Wilders et Al Edt, pp 111-118, 2002.

[33] W.E.Fitzgibbon and M.Garbey, *Fast Solvers for Reaction-Diffusion Systems :*

Application to Air Quality Models, Proc. Eccomas 2001,14pp, Swansae.

[34] M.Garbey, M.Resch, Y. Vassilevski, B. Sander, D. Pless, T. R. Fleiter, *Stent Graft Optimization in a Computer Grid simulation Environment*, (ref number 1238), 2nd Joint EMBS-BMES Conf. 2002.

[35] N. Barberou, M.Garbey M.Hess, M. Resch, T. Rossi, J.Toivanen and D.Tromeur Dervout, *Aitken-Schwarz method for efficient metacomputing of elliptic equations*, domain decomposition methods in science and engineering, dd14, Edited by I.Herrera, D.E.Keyes, O.B.Widlund and R.Yates, published by UNAM, pp 349-356, 2003.

[36] M.Resch, M.Garbey, Y.Vassilevsky, U. Kuster and B.Sander, *Blood Flow Simulation in Grid Environment*, Parallel Computational Fluid Dynamics, Edited by K.Matsuno, A.Ecer, J.Periaux, N.Satofuka and P.Fox, Elsevier, pp 195-202, 2002.

[37] J.Baranger, M.Garbey and F.Oudin, *On Aitken Like Acceleration of Schwarz Domain Decomposition Method Using Generalized Fourier*, domain decomposition methods in science and engineering, dd14, Edited by I.Herrera, D.E.Keyes, O.B.Widlund and R.Yates, published by UNAM, pp 341-348, 2003.

[38] M.Garbey and W.Shyy, *Error Estimation, Multilevel Method and Robust Extrapolation in the Numerical Solution of PDEs*, domain decomposition methods in science and engineering, dd14, Edited by I.Herrera, D.E.Keyes, O.B.Widlund and R.Yates, published by UNAM, pp 403-410, 2003.

[39] M.Garbey and G.Zouridakis, Modeling Tumor Growth, *from Differential Deformable Models to Growth Prediction of Tumors Detected in PET Images*, IEE03 Cancun, 2003.

[40] M.Garbey, R.Keller and M.Resch, *Toward a Scalable Algorithm for Distributed Computing of Air-Quality Problems*, EuroPVM/MPI03 Venice.

[41] M.Garbey, Aitken-Schwarz Method for CFD Solvers, Parallel CFD 03, Moscow 2003, to appear.

[42] J.Baranger, M.Garbey and F.Oudin, Generalized Aitken-like acceleration of the Schwarz method, Domain decomposition in science and engineering, R.Kornhuber et al editors, Lecture notes in computational science and engineering, Springer, pp 505-512, 2004.

[43] R.Vaidyanathan, W.Shyy, M.Garbey and R.Haftka, *CFD Code Verification using Least Square Extrapolation Method*, Reno, AIAA04 2004-0739.

[44] Mihaela Popescu, Wei Shyy and Marc Garbey , *A Cut-Cell-Based Dispersion-Relation-Preservation Scheme for Waves Around Complex Geometries*, Reno, AIAA 2004.

[45] M.Garbey, A.Merla and I.Pavlidis, *Estimation of Blood Flow Rate and Vessel Location from Thermal Video*, Proceeding of the IEE computer society conference on Computer Vision and Pattern Recognition, Washington DC, June 27-July 2 2004.

[46] M.Garbey, H.Ltaief and R.Keller, *Reaction-convection-diffusion Solver for CFD Applications on the Grid*, Proceeding of Parallel CFD 04, Parallel Computational Fluid Dynamics, Edited by G.Winter, A Ecer, J.Periaux, N.Satofuka and P.Fox, published by

Elsevier, pp 353-360, 2005.

[47] M.Garbey, W.Shyy, B.Hadri and E.Rougetet, *Efficient Solution Techniques for CFD and Heat Transfer*, ASME Heat Transfer/Fluids Engineering Summer Conference, 2004.

[48] E.Uzrogen, W.Shyy and M.Garbey, *Parallelized Domain Decomposition Technique for Multiphase Flow*, Proceedings of 2004 ASME Heat Transfer/Fluids Engineering Summer Conference, July 11-15, Charlotte, North Carolina, Paper No. ASME HT-FED-2004-56079, 2004.

[49] M.Garbey, B.O.Dia, C.Picard and R.Tran Son Tay, *Heterogeneous domain decomposition for multi-scale problems*, 43rd Aerospace Sciences Meeting & Exhibit, Paper No 2005-1389, 2005.

[50] M.Garbey, B.Hadri and W.Shyy, *Fast Elliptic Solver for Incompressible Navier Stokes Flow and Heat Transfer Problems on the Grid*, 43rd Aerospace Sciences Meeting and Exhibit Conference, paper number: AIAA-2005-1386

[51] R.K.Singh, N.N'Dri, R.Singh, E.Uzgoren, W.Shyy and M.Garbey, *Three-Dimensional Adaptive, Cartesian Grid Method for Multiphase Flow Computations*, 43rd Aerospace Sciences Meeting & Exhibit, Paper No 2005-1389, 2005.

[52] N.Sun, M.Garbey, A.Merla and I.Pavlidis, *Imaging the Cardiovascular Pulse*, Proceeding of the IEE computer society conference on Computer Vision and Pattern Recognition, San Diego, 2005.

[53] M.Garbey and C.Picard, *A Least Square Extrapolation Method for the a priori Error Estimate of CFD and Heat transfer Problem*, C.Soize, G.I.Schueller Editors, pp871-876, Structural Dynamic Eurodyn 2005

[54] Hatem Ltaief, Marc Garbey, and Edgar Gabriel, *Parallel Fault Tolerant Algorithms for Parabolic Problems*, in Wolfgang E. Nagel, Wolfgang V.Walter and Wolfgang Lehner editors, Proceeding of the 12th International Euro-Pr Conference, pp 700-709, Lecture Notes in Computer Science, Vol. 4128, Springer 2006.

[55] F.Pacull and M.Garbey, *The Multigrid-extrapolation technique applied to the Immersed Boundary Method*, 16th International Conf. on Domain Decomposition Method-NewYork Jan 2005, Lecture Notes in Computational Science and Engineering No 55, Olof B.Widlund and David E.Keyes editors, Springer Verlag, pp 709-716, 2006.

[56] M.Garbey and H.Ltaief, *Fault tolerant domain decomposition for parabolic problems*, 16th International Conf. on Domain Decomposition Method- NewYork Jan 2005, Lecture Notes in Computational Science and Engineering No55, Olof B.Widlund and David E.Keyes editors, Springer Verlag, pp 567-574, 2006.

[57] N.Sun, I.Pavlidis, M.Garbey and J.Fei, *Harvesting the Thermal Cardiac Pulse Signal*, R.Larsen, M.Nielsen and J.Sporring (Eds): MICCAI 2006, LNCS 4191, pp569-576, Springer Verlag Berlin Heidelberg 2006.

[58] C.Picard, M.Garbey and V.Subramanian, *Mapping LSE Method on a Grid: Software Architecture and Performance Gain*, Parallel Computational Fluid Dynamics, Theory and Applications, A.Deane et Al edit. Elsevier, pp 149-156, 2006.

- [59] M.Garbey and H.Ltaief, *On a Fault Tolerant Algorithm for a Parallel CFD Application*, Parallel Computational Fluid Dynamics, Theory and Applications, A.Deane et Al edit. Elsevier, pp 133-140, 2006.
- [60] M.Garbey and F.Pacull, *Toward a Matlab MPI Parallelized Immersed Boundary Method*, Parallel Computational Fluid Dynamics, Theory and Applications, A.Deane et Al edit. Elsevier, pp 397-404, 2006.
- [61] B.Hadri, M.Garbey and W.Shyy, *Improving the Resolution of an Elliptic Solver for CFD Problems on the Grid*, Parallel Computational Fluid Dynamics, Theory and Applications, A.Deane et Al edit. Elsevier, pp 317-324, 2006.
- [62] M.Garbey and B.Hadri, *Image Base CFD for Blood Flow Analysis*, accepted for publication at AIAA Reno 2007, 10p.
- [63] M.Garbey and C.Picard, *Toward a General Solution Verification Method for Complex PDE problem with Hands off Coding*, accepted for publication at AIAA Reno 2007, 14p.
- [64] V.Hilford, M.Garbey, S. Vadakattu, C.Addison, *WIMI - Web Interface to Medical Information*, best paper award in data engineering at SEDE'07, 16th internat. Conf. on software engineering and data engineering July 2007, Las Vegas, USA, to appear in the proceeding.
- [65] C.Picard, M.Garbey, G. Garbey, *Parallel Implementation for Solution Verification of CFD code*, to appear in SEDE'07, 16th internat. Conf. on software engineering and data engineering July 2007, Las Vegas, USA.to appear in the proceeding.
- [66] M.Garbey and C.Picard, *A General Solution Verification Method for Complex Heat and Flow problem with Hands off Coding*, , Keynote lecture, 5th International Conference on Heat Transfer, Canmore Alberta Canada June 18-22 2007. to appear in the proceeding.
- [67] M.Garbey and B.Hadri, *Toward Real Time Image Base CFD*, Domain Decomposition in Science and Engineering XVII, Editor Ulrich Langer et Al, Lecture Notes in Computational Science and Engineering No 60, Springer, pp 509-516, 2007.
- [68] M.Garbey, *A direct solver for the heat equation with domain decomposition in space and time*, Domain Decomposition in Science and Engineering XVII, Editor Ulrich Langer et Al, Lecture Notes in Computational Science and Engineering No 60, Springer, pp 501-508, 2007.
- [69] M.Garbey, B.Hadri, V.Hilford and C. Karmonik, *Parallel Image-Based Hemodynamic Simulator*, to appear in the proceeding of ICSNC'07, workshop HPC-Bio07, France, 2007.
- [70] M.Garbey and C.Picard, *A multilevel method for solution verification*, Domain Decomposition in Science and Engineering XVII, Editor Ulrich Langer et Al, Lecture Notes in Computational Science and Engineering No 60, Springer, pp 517-525, 2007.
- [71] Roger Tran-Son-Tay, Minki Hwang, Scott Berceci, C Keith Ozaki, Marc Garbey, *A Model of Vein Graft Intimal Hyperplasia*, 29th IEEE EMBS Annual International Conference, Lyon 2007, to appear.

[72] Bilel Hadri, H.Ltaief and M.Garbey, *An Hemodynamic Application on a Distributed Computing Environment*, to appear in AIAA Reno 2008.

[73] H.Ltaief, M.Garbey and E.Gabriel, *Performance Analysis of Fault Tolerant Algorithms for the Heat Equation in Three Space Dimensions*, Parallel Computational Fluid Dynamics, Edt. J.H.Kwon, A.Ecer, J.Periaux, N.Satofuka, P.Fox, Elsevier, pp 123-130, 2007.

[74] M.Garbey, C.Picard, V.Hilford and S.Vadakatu, *Toward an Intelligent Data and Visualization Desk for Endovascular Surgery*, to appear in the proceeding of CATA 08 Cancun 9-11 April, 2008.

[75] H.Ltaief and M.Garbey, *A Parallel Aitken-Additive Schwarz Waveform Relaxation Method for Parabolic Problems*, to appear in the proceeding of the parallel CFD conference, 2008.

[76] B.Hadri and M.Garbey, *A Fast Parallel Blood Flow Simulator*, to appear in the proceeding of the parallel CFD conference, 2008.

[77] M. Smaoui, M. Garbey and C. Mony, *Volunteer computing for ecology: the Virtual Prairie BOINC project*, accepted for publication in IEEE Asia-Pacific Services Computing Conference (IEEE APSCC 2008), Taiwan, pp 427-434.

[78] M.Garbey, M.Smaoui, N. De Brye and C.Picard, *Computational Tool for a Mini-Windmill Study with SOFT*, proceeding of the 18st International Conference in Domain Decomposition, to appear.

[79] F.Pacull and M.Garbey, *A Numerical Efficient Scheme for Elastic Immersed Boundaries*, proceeding of the 18st International Conference in Domain Decomposition, to appear.

[80] M.Garbey, C.Mony and M.Smaoui, *Fluid Flow - Agent Based Hybrid Model for the Simulation of Virtual Prairies*, Parallel CFD 2008, to appear in the proceeding.

[81] F.Pacull and M.Garbey, *A Parallel Immersed Boundary Method for Blood-like Suspension Flow Simulations*, Parallel CFD 2008, to appear in the proceeding.

[82] H.Ltaief and M.Garbey, *Performance Analysis of the Parallel Aitken-Additive Schwarz Waveform Relaxation Method on Distributed Environment*, Parallel CFD 2008, to appear in the proceeding.

3 Technical Reports

[1] M.Garbey, *Quasi Linear Parabolic-Hyperbolic Singular Perturbation Problem: Application to 2-Phase Flow in Porous Media Equation*, Preprint UA740 no 70, 1988.

[2] M.Garbey, *Asymptotic Analysis of Singular Perturbation Problems Governed by a Conservation Law*, Argonne Nat. Lab., MCS-P107-10-(89)

[3] M.Garbey, H.G.Kaper and M.K.Kwong, *Symbolic Manipulation Software and the Study of Differential Equation*, preprint Argonne Nat.Lab. 1990.

- [4] M.Garbey, H.G.Kaper, *Asymptotic Analysis: Basic Concepts and Definitions*, Argonne Nat.Lab., MCS-TM-179 (93)
- [5] M.Garbey, H.G.Kaper, *Approximation of Integrals*, Argonne Nat. Lab., MCS-TM-180 (93)
- [6] M.Garbey, *Quelques Schemas Numeriques deduits de l'Analyse Asymptotique pour Problemes a Petits Parametres*, Rapport Technique DRET (93)
- [7] M.Garbey, H.G.Kaper, *Boundary Layers*, Argonne Nat.Lab., MCS-TM-181 (93)
- [8] Y.Boudeville and M.Garbey, *Simulation d'un Catalyseur sur Architectures Paralleles*, Rapport Technique DRET (97)
- [9] M.Garbey, L.Viry and O.Coulaud, *Non Overlapping Domain Decomposition for Singularly Perturbed Elliptic Boundary Value Problem*, Rapport INRIA 3137 (1997)
- [10] A.L. Colomb Reinmann, M.Garbey and L.Flory, *Nouvelles Technologies de l'Apprentissage en Medecine et Science pour l'Ingenieur*, Chassey Le Camp, 90pp, Avril 1998.
- [11] M.Garbey, D.Sappey Marinier, *Nouvelles Technologies de l'Apprentissage en Medecine et Science pour l'Ingenieur*, Le Champ Fleury, 80pp, Mai 1999.
- [12] M.Garbey, *Domain Decomposition and Multi-Physic Coupling for the Power-Temperature Nuclear Reactor Problem*, Note Technique NT-DER-SSTH-2008-061, CEA.

4 Journal Papers Submitted for Publication

- H.Ltaief, R.Keller, M.Garbey and M.Resch, *A Grid Solver for Reaction-Convection-Diffusion Operators*, submitted.
- C.Mony, M.Garbey, M.Smaoui and M.L.Benot, *Optimal Profiles Plant Growth: A Modeling Approach*, submitted.

5 Books

- [1] H.G.Kaper and M.Garbey, *Asymptotic-induced Numerical Methods*, in: *Asymptotic Analysis and the Numerical Method of PDEs*, Lect. Notes in Pure and Applied Math., Vol.130 Dekker (1991)
- [2] M.Garbey and H.G.Kaper, *Numerical Methods for PDEs with Critical Parameters*, Kluwer, Dordrecht (1992)
- [3] N.Debit, M.Garbey, R.Hoppe, D.Keyes, Y.Kuznetsov and J.Periaux, *Domain Decomposition in Science and Engineering*, CIMNE Barcelona, 2002.
- [4] M.Garbey, *Special Issue on Computational Medicine*, Journal of Algorithms and Computational Technology, Vol2 No 4 2008.
- [5] M.Garbey, B. Bass, M. De Matelin, C. Collet and R. Tran Son Tay, *Computational Surgery and Dual Training*, Springer Verlag, to appear.

6 Chapter in Book or Publication in French with Review Committee

[1] G.Eljlali, M.Garbey and D.Tromeur Dervout, *Chapitre Analyse Numerique* dans le Livre OFTA, Serie ARAGO 19,pp169-182, Ed. Masson (1997).

[2] M.Garbey and D.Tromeur Dervout, *Méthodes Numériques et Couplage de Codes pour le Calcul Distribué Distant*, Calculateur Parallele (2001).