

## Liste de publications

### Articles

- [1] Y. Coudière and F. Hubert. A 3d discrete duality finite volume method for nonlinear elliptic equations. *SIAM J. Sci. Comp.*, 2010. <http://hal.archives-ouvertes.fr/hal-00456837/fr>.
- [2] Y. Coudière and G. Manzini. The discrete duality finite volume method for convection-diffusion problems. *SIAM J. Numer. Anal.*, 47(6):4163–4192, 2010. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/SINUM.10.pdf>.
- [3] Y. Coudière, C. Pierre, O. Rousseau, and R. Turpault. A 2d/3d discrete duality finite volume scheme. application to ecg simulation. *International Journal on Finite Volumes*, 6(1), 2009. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/IJFV.09.pdf>.
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- [5] Y. Coudière and C. Pierre. Stability and convergence of a finite volume method for two systems of reaction-diffusion equations in electro-cardiology. *Nonlinear Anal. Real World Appl.*, 7(4):916–935, 2006. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/JNLAB.06.pdf>.
- [6] A. Dervieux, D. Leservoisier, P. L. George, and Y. Coudière. About theoretical and practical impact of mesh adaptation on approximation of functions and pde solutions. *Internat. J. Numer. Methods Fluids*, 43(5):507–516, 2003. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/IJNMF.03.pdf>.
- [7] Y. Coudière, T. Gallouët, and R. Herbin. Discrete sobolev inequalities and  $L^p$  error estimates for finite volume solutions of convection diffusion equations. *Math. Model. Numer. Anal.*, 35(4):767–778, 2001. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/M2AN.01.pdf>.
- [8] Y. Coudière, J. P. Vila, and P. Villedieu. Convergence d'un schéma volumes finis explicite en temps pour les systèmes hyperboliques linéaires symétriques en domaines bornés (convergence of a finite volume time-explicit scheme for symmetric linear hyperbolic systems on bounded domains). *C.R. Acad. Sci., Paris, Sér. I, Math.*, 331:95–100, 2000. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/CRAS.00.ps.gz>.
- [9] Y. Coudière and P. Villedieu. Convergence of a finite volume scheme for the linear convection-diffusion equation on locally refined meshes. *Math. Model. Numer. Anal.*, 34(6):1123–1149, 2000. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/M2AN.00.pdf>.
- [10] Y. Coudière, J. P. Vila, and P. Villedieu. Convergence rate of a finite volume scheme for a two dimensional diffusion convection problem. *Math. Model. Numer. Anal.*, 33(3):493–516, 1999. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/M2AN.99.pdf>.

**Articles Soumis**

- [11] G. Laurent, S. Saal, M.Y. Amarouch, L. Faivre, G. Bertaux, S. Falcon-Eicher, O. Barthez, C. Thauvin-Robinet, P. Charron, P. Richard, V. Probst, E. Baron, I. Bar, J. Barc, J.J. Schott, J. Merot, R. Turpault, Y. Coudiere, G. Loussouarn, F. Kyndt, and J.E. Wolf. Multifocal ectopic Purkinje tachycardia, a new SCN5A-related cardiac channelopathy. *Submitted to the Journal of Clinical Investigation*, 2010.
- [12] A. Azzouzi, Y. Coudière, R. Turpault, and N. Zemzemi. A mathematical model of Purkinje-muscle junctions. *Submitted to Mathematical Biosciences and Engineering*, 2010.
- [13] Y. Bourgault, Y. Coudière, and M. Rioux. Optimal monodomain approximations of the bidomain equations for the isolated heart. *Submitted*, 2010.

**Articles de conférences dans le domaine de l'imagerie médicale, la biologie, la médecine**

Il s'agit d'articles et non d'abstracts.

- [14] M. Sermesant, E. Konukoglu, H. Delingette, Y. Coudière, P. Chinchapatnam, K. S. Rhode, R. S. Razavi, and N. Ayache. An anisotropic multi-front fast marching method for real-time simulation of cardiac electrophysiology. In *Functional Imaging And Modeling Of The Heart, 4th International Conference*, number 4466 in Lecture Notes In Computer Science, pages 160–169. Springer, 2007. DOI:10.1007/978-3-540-72907-517. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/fimh.07.pdf>.
- [15] M. Sermesant, Y. Coudière, V. Moreau-Villeger, K. S. Rhode, D. L. Hill, and R. S. Razavi. A fast-marching approach to cardiac electrophysiology simulation for xmr interventional imaging. In *Medical Image Computing And Computer-Assisted Intervention - MICCAI 2005*, number 3750 in Lect. Notes Comput. Sci. Springer, 2005. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/miccai.05.pdf>.
- [16] M. Sermesant, O. Faris, F. Evans, E. McVeigh, Y. Coudière, H. Delingette, and N. Ayache. Preliminary validation using in vivo measures of a macroscopic electrical model of the heart. In *International Symposium On Surgery Simulation And Soft Tissue Modeling - IS4TM'03*, Lect. Notes Comput. Sci., pages 230–243. Springer, 2003. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/is4tm.03.pdf>.
- [17] M. Sermesant, Y. Coudière, H. Delingette, N. Ayache, and J. A. Désidéri. An electro-mechanical model of the heart for cardiac image analysis. In W. J. Niessen and M. A. Viergever, editors, *Medical Image Computing And Computer-Assisted Intervention - MICCAI 2001. 4th International Conference*, number 2208 in Lect. Notes Comput. Sci., pages 224–231. Springer, 2001. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/miccai.01.pdf>.
- [18] N. Ayache, D. Chapelle, F. Clément, Y. Coudière, H. Delingette, J. A. Désidéri, M. Sermesant, M. Sorine, and José M. Urquiza. Towards model-based estimation of the cardiac electro-mechanical activity from ecg signals and ultrasound images. In T. Katila, I. E. Magnin, P. Clarysse, J. Montagnat, and J. Nenonen, editors, *Functional Imaging And Modeling Of The*

*Heart. 1st International Workshop*, number 2230 in *Lect. Notes Comput. Sci.*, pages 120–127. Springer, 2001. <http://www.math.sciences.univ-nantes.fr/~coudiere/documents/fimh.01.pdf>.

## Conférences internationales

Cette section regroupe l'ensemble de mes contributions (articles et quelques abstracts) retenues dans des conférences internationales et publiées à ce titre, dans le domaine des mathématiques appliquées mais aussi dans quelques conférences d'imagerie et bio-ingénierie ([24, 29, 30]), et médicale ([20, 25, 26]).

- [19] A. Azzouzi, Y. Coudière, and R. Turpault. A mathematical model of the ventricular conduction system. In *ICNAAM 2010*. AIP, 2010.
- [20] G. Laurent, S. Saal, M.Y. Amarouch, L. Faivre, G. Bertaux, O. Barthez, C. Thauvin-Robinet, P. Charron, P. Richard, V. Probst, E. Baron, I. Baro, J. Barc, J.J. Schott, J. Merot, Y. Coudiere, R. Turpault, G. Loussouarn, F. Kyndt, and J.E. Wolf. SCN5A mutation associated with a novel cardiac arrhythmia disorder involvingxs the left fascicular-purkinje system associated with dilated cardiomyopathy. *European Society of Cardiology (abstract)*, 2010.
- [21] Y. Coudière and F. Hubert. A 3d discrete duality finite volume method for nonlinear elliptic equations. In *Algoritmy, Conference on Scientific Computing*, Slovakia, 2009. <http://hal.archives-ouvertes.fr/hal-00356879/fr>.
- [22] Y. Coudière, C. Pierre, and R. Turpault. A 2d/3d finite volume method used to solve the bidomain equations of electrocardiology. In *Algoritmy, Conference on Scientific Computing*, Slovakia, 2009. <http://hal.archives-ouvertes.fr/hal-00357267/fr>.
- [23] Y. Coudière, C. Pierre, O. Rousseau, and R. Turpault. A ddfv scheme for anisotropic and heterogeneous elliptic equations, application to a bio-mathematics problem: Electrocardiogram simulation. In *Finite Volume For Complex Applications, Problems And Perspectives. 5th International Conference*. London (UK) Wiley, 2008. <http://hal.archives-ouvertes.fr/hal-00189765/fr>.
- [24] M. Pop, M. Sermesant, Y. Coudière, J. J. Graham, M. Bronskill, A. Dick, and G. A. Wright. A theoretical model of ventricular reentry and its radiofrequency ablation therapy. In *2006 IEEE International Symposium On Biomedical Imaging*, 2006.
- [25] M. Pop, M. Sermesant, A. Dick, J. J. Graham, Y. Coudière, and G. A. Wright. Aid of computer modelling to identify ventricular reentries due to infarct scars. In *15th World Congress In Cardiac Electrophysiology And Cardiac Techniques*, volume 8. Europace, 2006. Supplement 1.
- [26] M. Pop, M. Sermesant, J. J. Graham, A. Dick, Y. Coudière, and G. A. Wright. Assessment of radiofrequency ablation of ventricular arrhythmias via magnetic resonance imaging and computer modelling. In *15th World Congress In Cardiac Electrophysiology And Cardiac Techniques*, volume 8. Europace, 2006. Supplement 1.
- [27] Y. Coudière, C. Pierre, and R. Turpault. A finite volume method for the coupled heart-torso bidomain model in electrocardiology. In *Computational Fluid And Solid Mechanics*, 3rd MIT Conference, 2005.

- [28] Y. Coudière, C. Pierre, and R. Turpault. Stability and convergence of a finite volume method for a reaction-diffusion system of equations in electro-cardiology. In *Finite Volumes For Complex Applications IV. Problems And Perspectives. Papers From The 4th International Conference*, pages 163–172. Hermès, 2005.
- [29] M. Sermesant, Y. Coudière, H. Delingette, and N. Ayache. Progress towards an electromechanical model of the heart for cardiac image analysis. In *IEEE International Symposium On Biomedical Imaging (ISBI'02)*, 2002.
- [30] M. Sermesant, Y. Coudière, H. Delingette, N. Ayache, J. Sainte-Marie, D. Chapelle, F. Clément, and M. Sorine. Progress towards model-based estimation of the cardiac electromechanical activity from ecg signals and 4d images. *ESAIM, Proc.*, 12:153–161, 2002.
- [31] Y. Coudière, J. P. Vila, and P. Villedieu. Convergence of the finite volumes method for friedrichs' systems on bounded domains. In *On Nonlinear Partial Differential Equations*, Besançon (France), 1999. International Conference in memory of S.N. Kruskov.
- [32] Y. Coudière and P. Villedieu. Convergence rate of the finite volume time-explicit upwind scheme for the maxwell system on a bounded domain. In F. Benkhaldoum and R. Vilsmeier, editors, *Finite Volumes For Complex Applications II. Problems And Perspectives. Papers From The 2nd International Conference*, pages 125–132. Hermès, 1999.
- [33] Y. Coudière and P. Villedieu. Cell centered finite volume schemes for convection-diffusion problems. In *Abstracts Of The Invited Lectures At The Seventh International Colloquium On Numerical Analysis*, pages 233–240, Plovdiv, Bulgaria, August 1998.
- [34] Y. Coudière, J. P. Vila, and P. Villedieu. Convergence of a finite volume scheme for a diffusion convection problem. In F. Benkhaldoum and R. Vilsmeier, editors, *Finite Volumes For Complex Applications*, pages 161–168. Hermès, 1996.

## Autres

Rapports techniques, thèses et articles de valoriation et vulgarisation.

- [35] C. Berthon, Y. Coudière, and R. Turpault. Simuler, vite et bien. Têtes chercheuses – Actualité et culture des sciences en Pays de la Loire, Automne 2010.
- [36] Y. Coudière. *Contributions à l'analyse numérique de méthodes de volumes finis, à la modélisation et au calcul en électrocardiologie*. HDR report, Université de Nantes, 2 juillet 2009. <http://tel.archives-ouvertes.fr/tel-00421901/fr>.
- [37] Y. Coudière and R. Turpault. *MATAPLI*, chapter Modèles et Méthodes Mathématiques en Électrocardiologie. SMAI, 2008.
- [38] Y. Coudière, C. Pierre, and R. Turpault. Solving the fully coupled heart and torso problems of electrocardiology with a 3d discrete duality finite volume method. 2006. <http://hal.archives-ouvertes.fr/hal-00016825>.
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- [40] Y. Coudière. *Analyse de Schémas Volumes Finis Sur Maillages Non Structurés Pour Des Problèmes Linéaires Hyperboliques et Elliptiques*. PhD thesis, Université Paul Sabatier, 12 janvier 1999.