Vuk Milisic

Curriculum vitae

PERSONAL DATA

Birth	13 juin 1973, à Toulouse
Address	9, rue Turenne, 29200 Brest
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EDUCATION

PhD 1998-2001

Institut de Mathématiques de Bordeaux, Université Bordeaux I

Title : Discrete kinetic approximation of initial-boundary conservation laws, Supervisors : D. Aregba, B. Hanouzet et R. Natalini.

Attaché temporaire éducation et recherche 2001-2002

Institut de Mathématiques de Bordeaux, Université Bordeaux I

Post-doc 2002-2004

Chaire de Modélisation et de Calcul Scientifique, EPFL Lausanne, Suisse

Title : Geometrical multi-scale modelling of the cario-vascular system Supervisor : A. Quarteroni.

Post-doc 2004-2005

Laboratoire Jean Kuntzmann

Title : Modelling and simulations of the heart contraction in great deformations, Supervisors : D. Caillerie (Prof. 3S Lab) et A. Raoult (Map5).

Habilitation mai 28, 2021

Laboratoire Analyse Géométrie & Application, Université Paris 13

Title : Modeling and mathematical analysis of some biological systems

CNRS (HORS CLASSE) RESEARCHER

Laboratoire Jean Kuntzmann 2005-2008

Collaborations with D. Bresch (DR) and E. Bonnetier (PR) and contract with Cardiatis.

Research topic : blood flows

Wolfgang Pauli Institute 2008-2010

Begining of the collaboration with D. Oelz and C. Schmeiser.

Research topic : adhesion in cell motility

Laboratoire Analyse Géométrie et Applications 2010-2021

Collaborations with G. Wainrib, I. Balleli, N. Vauchelet, and M. Marulli

Various research topics : modelling and mathematical analysis of Divers thèmes abordés et poursuivis : modélisation et analyse mathématque pour

— adaptative immunity
— Henle loop
— cell motility

Laboratoire de Mathématiques de Bretagne Atlantique 2021-
Collaborations with M. Quicampoix, R. Buckdahn, P.-N. Bettiol, J. Rouot
Research topics : cell motility and control/optimal transport theory

PHD SUPERVISION

Irene Balleli 2013-2016
Co-supervision with G. Wainrib (MdC Ens Ulm), Hatem Zaag (Prof. Univ. Paris 13)
Title : Mathematical foundations of antibody affinity maturation

Marta Marulli 2017-2020
Co-supervision with N. Vauchelet (Prof. Univ. Paris 13), B. Franchi (Prof. Univ. Bologne)
Title : Mathematical model for ionic exchanges in renal tubules : the role of epithelium.

Samar Allouch 2019-2022
Co-supervision with N. Vauchelet (Prof. Univ. Paris 13)
Title : Mathematical analysis of adhesion forces in the context of cell motility

Thierno Balde Mamadou 2022-
Title : From elastic linkages to friction, towards adhering polymerizing filaments

INDUSTRIAL CONTRACTS & GRANTS

Contract with Cardiatis a company designing and commercializing artero-vascular prostheses 2006-2010
25000 €
Modeling and simulations of blood flow in stented arteries

Grant of the Institut des Systèmes Complexes (Lyon) 2007-2008
2000 €
Modeling and simulations of blood flow in stented arteries

CHRONOLOGICAL PUBLICATIONS LIST

[1] V. Milišić. Stability and convergence of discrete kinetic approximations to an initial-boundary value problem for conservation laws. English. *Proc. Am. Math. Soc.*, 131(6) :1727-1737, 2003. ISSN : 0002-9939. DOI : 10.1090/S0002-9939-03-06961-2.

[2] D. Aregba-Driollet et V. Milišić. Kinetic approximation of a boundary value problem for conservation laws. English. *Numer. Math.*, 97(4) :595-633, 2004. ISSN : 0029-599X. DOI : 10.1007/s00211-003-0514-5.

[3] F. R. Guarguaglini, V. Milišić et A. Terracina. A discrete BGK approximation for strongly degenerate parabolic problems with boundary conditions. English. *J. Differ. Equations*, 202(2) :183-207, 2004. ISSN : 0022-0396. DOI : 10.1016/j.jde.2004.03.008.

[4] V. Milišić et A. Quarteroni. Analysis of lumped parameter models for blood flow simulations and their relation with 1D models. English. *M2AN, Math. Model. Numer. Anal.*, 38(4) :613-632, 2004. ISSN : 0764-583X. DOI : 10.1051/m2an:2004036.

[5] M. Á. Fernández, V. Milisic et A. Quarteroni. Analysis of a geometrical multiscale blood flow model based on the coupling of ODEs and hyperbolic PDEs. English. *Multiscale Model. Simul.*, 4(1) :215-236, 2005. ISSN : 1540-3459. DOI : 10.1137/030602010.

[6] D. Caillerie, V. MilisÌicÌ, A. Mourad et A. Raoult. Modelling and simulation of fibrous biological tissues via discrete homogenization methods. *PAMM*, 7(1) :1121601-1121602, déc. 2007. DOI : 10.1002/pamm.200700347. URL : https://doi.org/10.1002%2Fpamm.200700347.

[7] P. S. Jouk, A. Mourad, V. Milisic, G. Michalowicz, A. Raoult, D. Caillerie et Y. Usson. Analysis of the fiber architecture of the heart by quantitative polarized light microscopy. Accuracy, limitations and contribution to the study of the fiber architecture of the ventricles during fetal and neonatal life. *Eur J Cardiothorac Surg*, 31(5) :915-921, mai 2007.

[8] D. Bresch et V. Milisic. Vers des lois de parois multi-échelle implicites. French. *C. R., Math., Acad. Sci. Paris*, 346(15-16) :833-838, 2008. ISSN : 1631-073X. DOI : 10.1016/j.crma.2008.06.003.

[9] V. Milišić. Very weak estimates for a rough Poisson-Dirichlet problem with natural vertical boundary conditions. English. *Methods Appl. Anal.*, 16(2) :157-186, 2009. ISSN : 1073-2772. DOI : 10.4310/MAA.2009.v16.n2.a2.

[10] E. Bonnetier, D. Bresch et V. Milišić. A priori convergence estimates for a rough Poisson-Dirichlet problem with natural vertical boundary conditions. English. In *Advances in mathematical fluid mechanics. Dedicated to Giovanni Paolo Galdi on the occasion of his 60th birthday. Selected papers of the international conference on mathematical fluid mechanics, Estoril, Portugal, May 21–25, 2007*, pages 105-134. Berlin: Springer, 2010. ISBN : 978-3-642-04067-2; 978-3-642-04068-9. DOI : 10.1007/978-3-642-04068-9_7.

[11] D. Bresch et V. Milisic. High order multi-scale wall-laws. I: The periodic case. English. *Q. Appl. Math.*, 68(2) :229-253, 2010. ISSN : 0033-569X. DOI : 10.1090/S0033-569X-10-01135-0.

[12] V. Milišić, A. Rambaud et K. P. Gostaf. Asymptotic analysis of blood flow in stented arteries: time dependency and direct simulations. English. *ESAIM, Proc.*, 30 :70-89, 2010. ISSN : 1270-900X. DOI : 10.1051/proc/2010007.

[13] V. Milišić et D. Oelz. On the asymptotic regime of a model for friction mediated by transient elastic linkages. English. *J. Math. Pures Appl. (9)*, 96(5) :484-501, 2011. ISSN : 0021-7824. DOI : 10.1016/j.matpur.2011.03.005.

[14] V. Milišić et D. Oelz. On a structured model for load-dependent reaction kinetics of transient elastic linkages mediating nonlinear friction. English. *SIAM J. Math. Anal.*, 47(3) :2104-2121, 2015. ISSN : 0036-1410. DOI : 10.1137/130947052.

[15] V. Milišić et D. Oelz. Tear-off versus global existence for a structured model of adhesion mediated by transient elastic linkages. English. *Commun. Math. Sci.*, 14(5) :1353-1372, 2016. ISSN : 1539-6746. DOI : 10.4310/CMS.2016.v14.n5.a7.

[16] V. Milišić et U. Razafison. Weighted L^p-theory for Poisson, biharmonic and Stokes problems on periodic unbounded strips of $\mathbb{R}^n$. English. *Ann. Univ. Ferrara, Sez. VII, Sci. Mat.*, 62(1) :117-142, 2016. ISSN : 0430-3202. DOI : 10.1007/s11565-015-0230-y.

[17] V. Milisic et G. Wainrib. Mathematical modeling of lymphocytes selection in the germinal center. English. *J. Math. Biol.*, 74(4) :933-979, 2017. ISSN : 0303-6812. DOI : 10.1007/s00285-016-1038-9.

[18] I. Balelli, V. Milišić et G. Wainrib. Random walks on binary strings applied to the somatic hypermutation of B-cells. English. *Math. Biosci.*, 300 :168-186, 2018. ISSN : 0025-5564. DOI : 10.1016/j.mbs.2018.03.022.

[19] V. Milisic. Initial layer analysis for a linkage density in cell adhesion mechanisms. English. *ESAIM, Proc. Surv.*, 62 :108-122, 2018. ISSN : 2267-3059. DOI : 10.1051/proc/201862108.

[20] V. Milišić et D. Oelz. Space dependent adhesion forces mediated by transient elastic linkages: new convergence and global existence results. English. *J. Differ. Equations*, 265(12) :6049-6082, 2018. ISSN : 0022-0396. DOI : 10.1016/j.jde.2018.07.007.

[21] I. Balelli, V. Milišić et G. Wainrib. Multi-type Galton-Watson processes with affinity-dependent selection applied to antibody affinity maturation. English. *Bull. Math. Biol.*, 81(3) :830-868, 2019. ISSN : 0092-8240. DOI : 10.1007/s11538-018-00548-y.

[22] M. Marulli, A. Edwards, V. Milišić et N. Vauchelet. On the role of the epithelium in a model of sodium exchange in renal tubules. English. *Math. Biosci.*, 321 :12, 2020. ISSN : 0025-5564. DOI : 10.1016/j.mbs.2020.108308. Id/No 108308.

[23] V. Milišić. From delayed and constrained minimizing movements to the harmonic map heat equation. English. *J. Funct. Anal.*, 279(2) :50, 2020. ISSN : 0022-1236. DOI : 10.1016/j.jfa.2020.108520. Id/No 108520.

[24] S. Allouch et V. Milisic. Friction mediated by transient elastic linkages : extension to loads of bounded variation. *Journal of Integral Equations and Applications*, 2021.

[25] S. Allouch et V. Milisic. Friction mediated by transient elastic linkages : asymptotic expansions and fat tails. submitted, 2022.

[26] V. Milišić et C. Schmeiser. Asymptotic limits for a nonlinear integro-differential equation modelling leukocytes' rolling on arterial walls. English. *Nonlinearity*, 35(2) :843-869, 2022. ISSN : 0951-7715. DOI : 10.1088/1361-6544/ac3eb5.

SKILLS

Languages	French (mother tongue) Serbian (mother tongue) English (fluent) Italian (fluent) German (spoken, read)
Logiciels	Matlab, LaTeX, WxMaxima, FreeFem++, FeNiCS, python