Curriculum Vitæ

Vincent Acary

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Born on 15th May 1973, Laval (Mayenne), France. French Citizen. Married, two children.

Current position & address

INRIA Senior Researcher (Directeur de Recherche DR2)

INRIA (French national research institute for computer sciences and control).
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Education

2015	**Habilitation à diriger les recherches (HdR)**. Applied Mathematics. Doctoral school of Mathematics, Information Sciences and Technologies, and Computer Science. Grenoble University.
1997 – 2000	**PhD Thesis**. Mechanics. Ecole Supérieure de Mécanique de Marseille (ESM2) & Université d'Aix-Marseille II
1997	**Master in Science in Mechanics (D.E.A.)** ESM2 & Université d'Aix-Marseille II. Mention Bien (Rank 1er/30).
1994 – 1997	**Engineering Diploma of ESM2**, (nowadays École Centrale Marseille)

Work Experience

2016-	**Senior researcher (DR2)** INRIA Rhône-Alpes
2014–2016	**Researcher** INRIA Chile, Santiago de Chile
2003–2013	**Researcher (CR1)** INRIA Rhône-Alpes
2003	**Post-doctoral fellow** INRIA Rhône-Alpes. European project SICONOS.
2001 – 2002	**Post-doctoral fellow** Post-doctoral CNRS grant. Laboratoire d'Automatique de Grenoble (LAG UMR CNRS/UJF/INPG 5528)/Schneider Electric.
1997 – 2000	**PhD candidate**. BDI CNRS grant. Laboratoire de Mécanique et d'Acoustique (LMA, UPR CNRS 7051, Marseille) & Groupe pour l'Application des Méthodes Scientifiques à l'Architecture et l'Urbanisme (GAMSAU, UMR CNRS 694, Marseille).

Scientific responsibilities

2019–	JTCAM. Co-founder and managing editors of the Journal of Theoritical, Computational and Applied Mechanics, first overlay journal in Mechanics http:/jtcam.episciences.org/
2018–	Tripop. Head of the joint research team of Inria Grenoble Rhone-Alpes and of the Laboratoire Jean Kuntzmann (LJK). http:/tripop.inrialpes.fr/
2011–	Ennsd. Co-founder and animator of the European network for nonsmooth dynamics. http://ennsd.gforge.inria.fr/
2011–2018	ENOCC. Member of the Euromech ENOCC committee

Grants

2018–2022	FUI Modeliscale https://team.inria.fr/modeliscale/
2019–2021	Digit-Slid. ANR (French National Agency for science) (Générique) project. http://digislid.gforge.inria.fr
2011–2015	Chaslim. ANR (Blanc) project. co-responsible for the work package 5 "Numerical tools and software development."
2008–2012	Saladyn. ANR project COSINUS 2008. Principal investigator.
2007–2009	Val-Ams. ANR project SETIN-2006. Responsible for the work package 3 "Advanced numerical analysis techniques.".
2003–2007	Siconos. IST2001-37172. FP7 European Project. Responsible for the work package 2 "Numerical algorithms and software tools".

Research Activities

Main research themes

Modeling, analysis, simulation and control of nonsmooth dynamical systems:

- Modeling, analysis and simulation of unilateral contact, impacts and Coulomb friction:
  Multiple impact law modeling, formulation of problems with unilateral contact and Coulomb friction in second order cone complementarity problems, numerical optimization based methods.
- Time integration schemes for nonsmooth dynamical systems:
  Higher order sweeping process, complementarity systems and evolution variational inequalities, higher order time integration scheme for nonsmooth mechanics, time–discontinuous Galerkin methods.
- Modeling, analysis and simulation of switched electrical circuits.
  Modeling of ideal electrical components in complementarity form, automatic circuit equation formulation of switched electrical circuit, time integration methods and solving procedure, numerical computations of periodic solutions.
- Time discretization methods for sliding mode control.
  Formulation of sliding mode control in terms of complementarity, implicit time discretization strategies free of numerical chattering.
- Simulation methods of gene regulatory networks:
  discontinuous differential equations, differential inclusion, Filippov's solution, stability.

Transfert & industrial applications

- Simulation and modeling of electrical power converters (STMicroelectronics and Mentor Graphics & patent on "improved circuit simulator)
- Simulation and design of electrical circuit breakers (more than 20 years of collaboration with Schneider Electric)
- Simulation and design of space robotic systems (ESA ExoMars project. Collaboration with TRASYS/Space Belgium)
- Numerical design and simulation software of multi-body systems (collaboration with ANSYS, France.)

Développement de logiciels de recherche

Siconos (2003–). Principal concepteur et développeur du logiciel

Fonctionalités :	Modélisation, simulation & commande des systèmes dynamiques non réguliers Mécanique, Electronique, Automatique, Mathématiques Appliquées, …
Effort approx.	15 personnes.an pour la conception et le développement 6 personnes.an pour les applications
Licence & distribution :	Open–source, GPL, 3 dépots A.P.P (2006,2010,2012)
Taille approx. & languages	100000 lignes de code C++, C, Python, FORTRAN
Communauté :	30 utilisateurs assidus, 200 abonnés à la “user-list”, 250 téléchargements des sources 10000 téléchargements de binaires depuis 2005
Animation :	Ecoles d’été et Formations.

ACEF (2007–2010) Conception et developpement du logiciel

Fonctionalités :	Modélisation, simulation des systèmes circuits électriques commutés
Effort approx.	2 personnes.an pour la conception et le developpement 1 personnes/an sur les applications
Licence & distribution :	Pas distribuer, 1 dépot A.P.P (2010)
Taille approx. & Languages	10000 lignes de code C++, Python
Communauté :	toujours utilisé a VERIMAG

Saladyn/Multibody et Saladyn/Toolbox. (2008–2014) Conception et developpement des logiciels

Fonctionalités :	Modélisation, simulation des systèmes mécaniques multi-corps
Effort approx.	2 personnes/an pour la conception et le developpement 1 personnes/an sur les applications
Licence & distribution :	Open-source GPL 1 dépot A.P.P (2012)
Taille approx. & Languages	10000 lignes de code C++, Python

Publications

Complete list of publications available here http://tripop.inrialpes.fr/people/acary/publications.html

Books

[B1] Remco Leine, Vincent Acary, and Olivier Brüls. *Advanced Topics in Nonsmooth Dynamics*. 2018.

[B2] V. Acary, O. Bonnefon, and B. Brogliato. *Nonsmooth modeling and simulation for switched circuits.* Lecture Notes in Electrical Engineering 69. Dordrecht: Springer. xxiii, 284 p., 2011.

[B3] V. Acary and B. Brogliato. *Numerical methods for nonsmooth dynamical systems. Applications in mechanics and electronics.* Lecture Notes in Applied and Computational Mechanics 35. Berlin: Springer. xxi, 525 p. , 2008.

Invited chapters in edited books.

[CiB1] Guillaume James, Vincent Acary, and Franck Pérignon. Periodic motions of coupled impact oscillators. In Remco Leine, Vincent Acary, and Olivier Brüls, editors, *Advanced Topics in Nonsmooth Dynamics, Transactions of the European Network for Nonsmooth Dynamics*, pages 93–134. Springer International Publishing, 2018.

[CiB2] Olivier Brüls, Vincent Acary, and Alberto Cardona. On the Constraints Formulation in the Nonsmooth Generalized-α Method. In Springer International Publishing, editor, *Advanced Topics in Nonsmooth Dynamics. Transactions of the European Network for Nonsmooth Dynamics*, pages 335–374. June 2018.

[CiB3] Vincent Acary, Maurice Brémond, and Olivier Huber. On solving contact problems with Coulomb friction: formulations and numerical comparisons. In Remco Leine, Vincent Acary, and Olivier Brüls, editors, *Advanced Topics in Nonsmooth Dynamics - Transactions of the European Network for Nonsmooth Dynamics*, pages 375–457. Springer International Publishing, June 2018.

[CiB4] O. Huber, B. Brogliato, V. Acary, A. Boubakir, F. Plestan, and Wang B. Experimental results on implicit and explicit time-discretization of equivalent-control-based sliding-mode control. In L. Fridman, J.P. Barbot, and F. Plestan, editors, *Recent Trends in Sliding Mode Control*. IET, 2016.

[CiB5] V. Acary and F. Cadoux. *Recent Advances in Contact Mechanics, Stavroulakis, Georgios E. (Ed.)*, volume 56 of *Lecture Notes in Applied and Computational Mechanics*, chapter Applications of an existence result for the Coulomb friction problem. Springer Verlag, 2013.

[CiB6] V. Acary. *Dynamics and Control of Switched Electronic Systems Vasca, Francesco; Iannelli, Luigi (Eds.)*, chapter 14. Time-Stepping via Complementarity, pages 417–450. Advances in Industrial Control. Springer Verlag, 2012. XIV, 492 p. 240 illus., 61 in color.

[CiB7] V. Acary and B. Brogliato. *Nonsmooth Mechanics and Analysis. Theoretical and Numerical Advances. P. Alart, O. Maisonneuve, R. T. Rockafellar (Eds)*, volume 12 of *Advances in Mechanics and Mathematics*, chapter 22. Higher Order Moreau's Sweeping Process, pages 261–276. Springer Verlag, 2006. ISBN: 978-0-387-29196-3 (Print) 978-0-387-29195-6 (Online).

Published or in press journal articles

[A1] Ritesh Gupta, Franck Bourrier, Vincent Acary, and Stéphane Lambert. Bayesian interface based calibration of a novel rockfall protection structure modelled in the Non-smooth contact dynamics framework. *Engineering Structures*, 2023. In press.

[A2] Vincent Acary, Franck Bourrier, and Benoit Viano. Variational approach for nonsmooth elastoplastic dynamics with contact and impacts. *Computer Methods in Applied Mechanics and Engineering*, 414:116156, February 2023.

[A3] Nicholas Anton Collins-Craft, Franck Bourrier, and Vincent Acary. On the formulation and implementation of extrinsic cohesive zone models with contact. *Computer Methods in Applied Mechanics and Engineering*, 400:115545, October 2022.

[A4] Franck Bourrier and Vincent Acary. Predictive capabilities of 2D and 3D block propagation models integrating block shape assessed from field experiments. *Rock Mechanics and Rock Engineering*, 55(2):591–609, February 2022.

[A5] Charlélie Bertrand, Alireza Ture Savadkoohi, Vincent Acary, and Claude-Henri Lamarque. Reduced-order model for the non-linear dynamics of cables. *Journal of Engineering Mechanics - ASCE*, 148(9), July 2022.

[A6] Vincent Acary and Franck Bourrier. Coulomb friction with rolling resistance as a cone complementarity problem. *European Journal of Mechanics- A/Solids*, 2020. in press.

[A7] Mohammad Rasool Mojallizadeh, Bernard Brogliato, and Vincent Acary. Discrete-time differentiators: design and comparative analysis. *International Journal of Robust and Nonlinear Control*, 31(16):7679–7723, November 2021.

[A8] Charlélie Bertrand, Vincent Acary, Claude-Henri Lamarque, and Alireza Ture Savadkoohi. A robust and efficient numerical finite element method for cables. *International Journal for Numerical Methods in Engineering*, June 2020.

[A9] Olivier Huber, Vincent Acary, and Bernard Brogliato. Lyapunov stability analysis of the implicit discrete-time twisting control algorithm. *IEEE Transactions on Automatic Control*, 65(6):2619–2626, 2020.

[A10] Bernard Brogliato, József Kövecses, and Vincent Acary. The contact problem in Lagrangian systems with redundant frictional bilateral and unilateral constraints and singular mass matrix. The all-sticking contacts problem. *Multibody System Dynamics*, 48(2):151–192, 2020.

[A11] Frédéric Dubois, Vincent Acary, and Michel Jean. The Contact Dynamics method: A nonsmooth story . *Comptes Rendus Mécanique*, 346(3):247–262, March 2018.

[A12] Clara Issanchou, Vincent Acary, Franck Pérignon, Cyril Touzé, and Jean-Loic Le Carrou. Nonsmooth contact dynamics for the numerical simulation of collisions in musical string instruments. *Journal of the Acoustical Society of America*, 143(5):1–13, May 2018.

[A13] N. Akhadkar, V. Acary, and B. Brogliato. Multibody systems with 3d revolute joint clearance, modelling, numerical simulation and experimental validation: an industrial case study. *Multibody System Dynamics*, 42:249–282, 2018.

[A14] M. Haddouni, V. Acary, S. Garreau, J.D. Beley, and B. Brogliato. Comparison of several numerical schemes for the resolution of index-3, index-2 and index-1 daes in the context of nonsmooth frictionless multibody dynamics. *Multibody Systems Dynamics*, 41:201–231, 2017.

[A15] N. Akhadkar, V. Acary, and B. Brogliato. Analysis of collocated feedback controllers for four-bar planar mechanisms with joint clearances. *Multibody Systems Dynamics*, 38:101–138, June 2016.

[A16] Olivier Huber, Vincent Acary, and Bernard Brogliato. Lyapunov stability and performance analysis of the implicit discrete sliding mode control. *IEEE Transactions on Automatic Control*, 61(10):3016–3030, October 2016.

[A17] O. Huber, V. Acary, B. Brogliato, and F. Plestan. Implicit discrete-time twisting controller without numerical chattering: analysis and experimental results. *Control Engineering Practice*, 46:129—141, 2016.

[A18] Vincent Acary. Energy conservation and dissipation properties of time-integration methods for nonsmooth elastodynamics with contact. *Journal of Applied Mathematics and Mechanics / Zeitschrift für Angewandte Mathematik und Mechanik*, 96(5):585–603, May 2016.

[A19] B. Wang, B. Brogliato, V. Acary, A. Boubakir, and F. Plestan. Experimental comparisons between implicit and explicit implementations of discrete-time sliding mode controllers: towards input and output chattering suppression. *IEEE Transactions on Control Systems Technology*, 23(5):2071–2075, 2015.

[A20] T. Schindler, S. Rezaei, J. Kursawe, and V. Acary. Half-explicit timestepping schemes on velocity level based on time-discontinuous galerkin methods. *Computer methods in Applied Mechanics in Engineering*, 290(15):250–276, 2015.

[A21] O. Brüls, V. Acary, and A. Cardona. Simultaneous enforcement of constraints at position and velocity levels in the nonsmooth generalized-α scheme. *Computer Methods in Applied Mechanics and Engineering*, 281:131–161, November 2014.

[A22] V. Acary, H. de Jong, and B. Brogliato. Numerical simulation of piecewise-linear models of gene regulatory networks using complementarity systems theory. *Physica D*, 269:103–199, January 2013.

[A23] Q. Z. Chen, V. Acary, G. Virlez, and O. Brüls. A nonsmooth generalized-α scheme for flexible multibody systems with unilateral constraints. *International Journal for Numerical Methods in Engineering*, 96(8):487–511, 2013.

[A24] T. Schindler and V. Acary. Timestepping schemes for nonsmooth dynamics based on discontinuous galerkin methods: Definition and outlook. *Mathematics and Computers in Simulation*, 95:180–199, 2013.

[A25] S. Greenhalgh, V. Acary, and B. Brogliato. On preserving dissipativity properties of linear complementarity dynamical systems with the θ-method. *Numerische Mathematik*, 125:601–637, 2013.

[A26] V. Acary. Projected event-capturing time-stepping schemes for nonsmooth mechanical systems with unilateral contact and Coulomb's friction. *Computer Methods in Applied Mechanics and Engineering*, 256:224 – 250, 2013.

[A27] V. Acary. Higher order event capturing time–stepping schemes for nonsmooth multibody systems with unilateral constraints and impacts. *Applied Numerical Mathematics*, 62:1259–1275, 2012.

[A28] V. Acary, B. Brogliato, and Y.V. Orlov. Chattering-free digital sliding-mode control with state observer and disturbance rejection. *Automatic Control, IEEE Transactions on*, 57(5):1087 –1101, may 2012.

[A29] C. Georgescu, B. Brogliato, and V. Acary. Switching, relay and complementarity systems: A tutorial on their well-posedness and relationships. *Physica D: Nonlinear Phenomena*, 241(22):1985 – 2002, 2012. Dynamics and Bifurcations of Nonsmooth Systems.

[A30] F. Bertails-Descoubes, F. Cadoux, G. Daviet, and V. Acary. A Nonsmooth Newton Solver for Capturing Exact Coulomb Friction in Fiber Assemblies. *ACM Transactions on Graphics*, January 2011.

[A31] V. Acary, F. Cadoux, C. Lemaréchal, and J. Malick. A formulation of the linear discrete coulomb friction problem via convex optimization. *ZAMM - Journal of Applied Mathematics and Mechanics / Zeitschrift für Angewandte Mathematik und Mechanik*, 91(2):155–175, 2011.

[A32] V. Acary and B. Brogliato. Implicit Euler numerical scheme and chattering-free implementation of sliding mode systems. *Systems and Control Letters.*, 2010. doi:10.1016/j.sysconle.2010.03.002.

[A33] V. Acary, O. Bonnefon, and B. Brogliato. Time-stepping numerical simulation of switched circuits with the nonsmooth dynamical systems approach. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 29(7):1042 – 1055, 2010.

[A34] V. Acary, B. Brogliato, and D. Goeleven. Higher order Moreau's sweeping process: mathematical formulation and numerical simulation. *Mathematical Programming Ser. A*, 113:133–217, 2008.

[A35] V. Acary and F. Pérignon. Siconos: A Software Platform for Modeling, Simulation, Analysis and Control of Nonsmooth Dynamical Systems. *Simulation News in Europe*, 17(3/4):19–26, December 2007.

[A36] B. Brogliato, A. Daniilidis, C. Lemaréchal, and V. Acary. On the equivalence between complementarity systems, projected systems and differential inclusions. *Systems and Control Letters*, 55:45–51, 2006.

[A37] Y. Monerie and V. Acary. Formulation dynamique d'un modèle de zone cohésive tridimensionnel couplant endommagement et frottement. *Revue européenne des éléments finis*, 10(02–03–04):489–503, 2001.

[A38] M. Jean, V. Acary, and Y. Monerie. Non smooth contact dynamics approach of cohesive materials. *Philisophical Transactions : Mathematical, Physical & Engineering Sciences, The Royal Society, London A*, A359(1789):2497–2518, 2001.

Communications in conference proceedings

[C1] Vincent Acary, Paul Armand, and Hoang Minh Nguyen. High-accuracy computation of rolling friction contact problems. In *9th NAFOSTED Conference on Information and Computer Science (NICS)*, Ho Chi Minh City, Vietnam, Vietnam, October 2022. IEEE.

[C2] Alexandre Rocca, Vincent Acary, and Bernard Brogliato. Index-2 hybrid DAE: a case study with well-posedness and numerical analysis. In *IFAC World Congress 2020*, June 2020.

[C3] N. Akhadkar, V. Acary, and B. Brogliato. 3d revolute joint with clearance in multibody systems. In *7th international conference on Computational Kinematics (CK2017)*, Poitiers, France, September 2017. IFTOMM.

[C4] Narendra Akhadkar, Vincent Acary, and Bernard Brogliato. Influence of imperfect joints and geometrical tolerances on a circuit breaker dynamics. In *IFToMM WC 2019: Advances in Mechanism and Machine Science*, Krakow, Poland, June 2019.

[C5] Bin Wang, B. Brogliato, V. Acary, Ahsene Boubakir, and F. Plestan. Experimental comparisons between implicit and explicit implementations of discrete-time sliding mode controllers: towards chattering suppression in output and input signals. In *VVS 2014 - IEEE International Workshop on Variable Structure Systems*, pages 1–6, Nantes, France, 2014.

[C6] O. Huber, V. Acary, and B. Brogliato. Enhanced matching perturbation attenuation with discrete-time implementations of sliding-mode controllers. In *ECC - 13th European Control Conference*, pages 2606–2611, Strasbourg, France, June 2014. IEEE.

[C7] O. Huber, V. Acary, B. Brogliato, and F. Plestan. Discrete-time twisting controller without numerical chattering: analysis and experimental results with an implicit method. In *CDC 2014 - IEEE 53rd Annual Conference on Decision and Control*, Los Angeles, United States, September 2014. IEEE.

[C8] Valentina Sessa, Luigi Iannelli, V. Acary, B. Brogliato, and Francesco Vasca. Computing Period and Shape of Oscillations in Piecewise Linear Lur'e Systems: a Complementarity Approach. In *CDC 2013 - 52nd IEEE Conference on Decision and Control*, Firenze, Italy, October 2013.

[C9] O. Huber, V. Acary, and B. Brogliato. Comparison between explicit and implicit discrete-time implementations of sliding-mode controllers. In *CDC 2013 - 52nd IEEE Conference on Decision and Control*, Florence, Italy, October 2013.

[C10] M. Haddouni, V. Acary, and J.-D. Beley. Comparison of index-3, index-2 and index-1 DAE solvers for nonsmooth multibody systems with unilateral and bilateral constraints. In *Multibody Dynamics 2013*, Zagreb, Croatia, May 2013. Eccomas.

[C11] V. Acary, M. Brémond, Konstantinos Kapellos, Jan Michalczyk, and Roger Pissard-Gibollet. Mechanical simulation of the Exomars rover using Siconos in 3DROV. In *ASTRA 2013 - 12th Symposium on Advanced Space Technologies in Robotics and Automation*, Noordwijk, Netherlands, May 2013. ESA/ESTEC.

[C12] H.B. Oza, V. Acary, Y.V. Orlov, S.K. Spurgeon, and B. Brogliato. Finite time tracking of unilaterally constrained planar systems with pre-specified settling time: Second order sliding mode synthesis and chattering-free digital implementation. In *Decision and Control (CDC), 2012 IEEE 51st Annual Conference on*, pages 5471–5476, Dec 2012.

[C13] Q. Z. Chen, V. Acary, G. Virlez, and O. Brüls. A Newmark-Type Integrator for Flexible Systems Considering Nonsmooth Unilateral Constraints. In Peter Eberhard, editor, *The Second Joint International Conference on Multibody System Dynamics - IMSD 2012*, Stuttgart, Germany, March 2012. ASME (American Society of Mechanical Engineers), IFToMM (International Federation for the Promotion of Mechanism and Machine Science), IUTAM (International Union of Theoretical and Applied Mechanics), KSME (Korean Society of Mechanical Engineers) and JSME.

[C14] V. Acary, C.I. Morarescu, F. Pérignon, and B. Brogliato. Numerical simulation of nonsmooth systems and switching control with the siconos/control toolbox. In *6th Euromech Nonlinear Dynamics Conference, ENOC 2008,*, St Petersburg., 29 June 2008.

[C15] M. Renouf and V. Acary. Comparison and coupling of algorithms for collisions, contact and friction in rigid multi-body systems. In C.A. Mota Soares et.al., editor, *III European Conference on Computational Mechanics Solids, Structures and Coupled Problems in Engineering (ECCM)*, Lisbon, Portugal, June 2006.

[C16] V. Acary. An overview of Non Smooth Dynamical Systems. Moreau's Sweeping Process, Higher order systems and links with optimization. In C. Lemaréchal, F. Jarre, and J. Zowe, editors, *Optimization and its applications.*, Oberwolfach, Germany, 2005. Oberwolfach reports. Springer Verlag.

[C17] V. Acary and B. Brogliato. Numerical time integration of higher order dynamical systems with state constraints. In Dick H. van Campen, editor, *ENOC-2005*, Eindhoven, Netherlands, 2005. Technical University Eindhoven Tu/e.

[C18] V. Acary and D.-E. Taha. Concurrent Multiple impacts in rigid bodies: Formulation and simulation. In Dick H. van Campen, editor, *ENOC-2005*, Eindhoven, Netherlands, 2005. Technical University Eindhoven Tu/e.

[C19] M. Renouf, V. Acary, and G. Dumont. 3D frictional contact and impact multibody dynamics. A comparison of algorithms suitable for real-time applications. In *ECCOMAS Thematic Conference Multibody Dynamics 2005*, Madrid, June 2005.

[C20] V. Acary and B. Brogliato. Concurrent multiple impacts modelling - case-study of a 3-ball chain. In K. J. Bathe, editor, *Second MIT conference on computational Fluid and Solid Mechanics*, pages 1842–1847. Elsevier, June 2003.

[C21] V. Acary and M. Jean. Numerical modeling of three dimensional divided structures by the non smooth contact dynamics method: Application to masonry structure. In B.H.V. Topping, editor, *The Fifth international Conference on Computational Structures Technology 2000*, pages 211–222. Civil-Comp Press, 6-8 September 2000.

[C22] V. Acary, J.-Y. Blaise, P. Drap, M. Florenzano, S. Garrec, M. Jean, and D. Merad. NSCD method applied to mechanical simulation of masonry in historical buildings using MOMA. In *XVII CIPA International Symposium*, Brazil, 1999.

[C23] V. Acary and M. Jean. Numerical simulation of monuments by the contacts dynamics method. In DGEMN-LNEC-JRC, editor, *Monument-98, Workshop on seismic perfomance of monuments*, pages 69–78. Laboratório Nacional de engenharia Civil (LNEC), November 12-14 1998.

Communications in conferences based on small papers or abstracts

[Co1] Vincent Acary, Franck Bourrier, and Benoit Viano. A monolithic computational method for elasto-dynamics with plasticity and contact based on variational approach. In *ICCCM 2023 International Conference on Computational Contact Mechanics*, Turin, Italy, July 5-7, 2023.

[Co2] N.A. Collins-Craft, F. Bourrier, and V. Acary. Extending non-smooth contact mechanics to cohesive zone modelling. In *7th International Conference on Computational Contact Mechanics*, Turin, Italy, 05–07 July 2023.

[Co3] N.A. Collins-Craft, F. Bourrier, and V. Acary. A non-smooth extrinsic cohesive zone model including contact and friction. In *The Seventh International Conference on Computational Modelling of Fracture and Failure of Materials and Structures (CFRAC 2023)*, Prague, Czechia, 21–23 June 2023.

[Co4] N.A. Collins-Craft, F. Bourrier, J. Gaume, and V. Acary. A non-smooth cohesive zone model for rock fracture and contact. In *European Geophysical Union General Assembly 2023*, Vienna, Austria, 23–28 April 2023.

[Co5] Vincent Acary. Time-integration methods for nonsmooth contact dynamics : beyond the seminal moreau-jean scheme. In *CMIS 2022 Contact Mechanics international symposium*, Chexbres. Switzerland, May 23-25, 2022. Keynote lecture.

[Co6] Vincent Acary, Charlélie Bertrand, Claude-Henri Lamarque, and Alireza Ture Savadkoohi. Computational methods for the simulation of nonsmooth cable dynamics in ropeways transportation systems. In *Symposium on High Performance Multibody System Simulation*, University of Innsbruck, Faculty of Engineering Sciences, Department of Mechatronics. Innsbrück, Austria, 7–8 October 2022.

[Co7] N.A. Collins-Craft, F. Bourrier, and V. Acary. A non-smooth formulation of an extrinsic cohesive zone model with contact and friction. In *11th European Solid Mechanics Conference (ESMC 2022)*, Galway, Ireland, 04–08 July 2022.

[Co8] N.A. Collins-Craft, F. Bourrier, and V. Acary. An extrinsic cohesive zone model with contact and friction. In *18th European Mechanics of Materials Conference (EMMC 2022))*, Oxford, United Kingdom, 04–06 April 2022.

[Co9] Charlélie Bertrand, Vincent Acary, Claude-Henri Lamarque, and Alireza Ture Savadkoohi. Equilibrium of a non-compressible cable subjected to unilateral constraints. In *10 th European Nonlinear Oscillation Conference (ENOC)*, Lyon, France, 17-22 July 2022.

[Co10] Vincent Acary. Jean Jacques Moreau. Un fondateur de la mécanique non lisse. In *Travaux récents dans le sillage de Jean Jacques Moreau*, Académie des Sciences. Paris. France, June 11, 2021. Invited lecture.

[Co11] Charlélie Bertrand, Vincent Acary, Claude-Henri Lamarque, and Alireza Ture Savadkoohi. A robust numerical implementation of cable finite elements. In *International Congress of Theoretical and Applied Mechanics (ICTAM)*, Milano, Italy, 23-28 August 2020+1.

[Co12] Charlélie Bertrand, Vincent Acary, Claude-Henri Lamarque, and Alireza Ture Savadkoohi. Numerical dynamics of a cable subjected to frictional impact. In *Conference on the Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF)*, Halle, Germany, 6-10 September 2021.

[Co13] Benoit Viano, Franck Bourrier, and Vincent Acary. Modelling elastoplastic structures under impact using nonsmooth mechanics and optimisation methods. In *Computational Plasticity. Fundamentals and Applications (COMPLAS)*, Barcelona, Spain, 7–9 September 2021.

[Co14] N.A. Collins-Craft, F. Bourrier, and V. Acary. An extrinsic cohesive zone model with contact and friction. In *33rd Nordic Seminar on Computational Mechanics*, Jönköping, Sweden, 25–26 April 2021.

[Co15] Vincent Acary. The nonsmooth dynamics framework for the analysis and simulation of multi-body systems. In *Multibody Dynamics Workshop 2019. 2nd International Multibody Summer School*, Parma, Italy, 20-24 May 2019. Invited lecture.

[Co16] Vincent Acary, Maurice Brémond, and Olivier Huber. Time-integration methods for nonsmooth contact dynamics : beyond the seminal moreau-jean scheme. In *CMIS 2018 Contact Mechanics international symposium*, Biella, Italy, October 23-25, 2018.

[Co17] N. Akhadkar, V. Acary, and B. Brogliato. Worst-case analysis of approximate straight–line motion mechanism with link tolerances and joint clearances. In *9th European Nonlinear Dynamics Conference (ENOC 2017)*, Budapest, Hungary, May 2017. EUROMECH.

[Co18] C. Yoong, V. Acary, and M. Legrand. Modification of Moreau–Jean's Scheme for Energy Conservation in Inelastic Impact Dynamics. In *9th European Nonlinear Dynamics Conference (ENOC 2017)*, Budapest, Hungary, May 2017. EUROMECH.

[Co19] M. Haddouni, V. Acary, S. Garreau, J.D. Beley, and B. Brogliato. Numerical time integration schemes for nonsmooth multibody systems in the event-driven framework. In S. Idelsohn, V. Sonzogni, A. Coutinho, M. Cruchaga, A. Lew, and M. Cerrolaza, editors, *1st Pan-American Congress on Computational Mechanics - PANACM 2015*, Buenos Aires, April 2015.

[Co20] V. Acary, Hidde De Jong, and B. Brogliato. Numerical simulation of piecewise-linear models of gene regulatory networks using complementarity systems (Extended Abstract). In *MTNS 2014 - 21st International Symposium on Mathematical Theory of Networks and Systems*, Groningen, Netherlands, July 2014.

[Co21] O. Brüls, V. Acary, and Alberto Cardona. A Penetration-free Nonsmooth Dynamics Method for Frictionless Contact/Impact Problems. In *WCCM XI - 11th World Congress on Computational Mechanics - 5th European Conference on Computational Mechanics (ECCM V) 6th European Conference on Computational Fluid Dynamics (ECFD VI)*, Barcelona, Spain, July 2014. Eugenio Oñate.

[Co22] O. Brüls, V. Acary, and Alberto Cardona. The nonsmooth generalized-α scheme with a simultaneous enforcement of constraints at position and velocity levels. In *ENOC 2014 - European Nonlinear Oscillations Conference*, Vienna, Austria, July 2014.

[Co23] N. Akhadkar, V. Acary, B. Brogliato, and M. Abadie. Analysis of four-bar planar mechanisms with joint clearances. In *ENOC 2014 - European Nonlinear Oscillations Conference*, Vienna, Austria, July 2014.

[Co24] V. Acary, Guillaume James, and F. Pérignon. Periodic motions of coupled impact oscillators. In *11th World Congress on Computational Mechanics (WCCM XI) 5th European Conference on Computational Mechanics (ECCM V) 6th European Conference on Computational Fluid Dynamics (ECFD VI)*, Barcelona, Spain, July 2014.

[Co25] V. Acary, Guillaume James, and F. Pérignon. Periodic motions of coupled impact oscillators. In *ENOC 2014 - 8th European Nonlinear Dynamics Conference*, Vienna, Austria, July 2014.

[Co26] V. Acary and M. Brémond. An open question : How to solve efficiently 3D frictional contact problem? Computational Contact Mechanics: Advances and Frontiers in Modeling Contact (14w5147), February 2014.

[Co27] V. Acary. Ordinary differential equations with discontinuous right-hand sides as complementarity systems. Application to gene regulatory networks. In *Fourth International Conference on Continuous Optimization (ICCOPT 2013)*, Lisbon, Portugal, July 2013.

[Co28] T. Schindler and V. Acary. Application of timestepping schemes based on time discontinuous Galerkin methods to multi-dimensional examples. In *Euromech 514 - New trends in Contact Mechanics*, Cargese, France, March 2012. M. Raous, Peter Wriggers.

[Co29] V. Acary. Numerical simulation of piecewise-linear models of gene regulatory networks using complementarity systems. In D. Sun and Toh K.-C., editors, *Workshop 3 on Comple-*

mentarity And Its Extensions. IMS, Institute for Mathematical Sciences. National university of Singapore, 17–21 December 2012. http://www2.ims.nus.edu.sg/Programs/012opti/wk3.php.

[Co30] S. Greenhalgh, V. Acary, and B. Brogliato. Preservation of dissipativity properties with the (theta, gamma)-discretization. In *AMMCS. International Conference on Applied Mathematics, Modeling and Computational Science*, Waterloo, Canada, March 2011. SIAM/AIMS.

[Co31] T. Schindler and V. Acary. Timestepping Schemes Based On Time Discontinuous Galerkin Methods. In *ICIAM 2011 – 7th International Congress on Industrial and Applied Mathematics*, Vancouver, Canada, March 2011. SIAM.

[Co32] T. Schindler and V. Acary. Timestepping Schemes Based On Time Discontinuous Galerkin Methods. In *EUROMECH Colloqium 516. Nonsmooth contact and impact laws in mechanics*, Grenoble, France, March 2011. EUROMECH INRIA.

[Co33] V. Acary and O. Bonnefon. Time integration of nonsmooth mechanical systems with unilateral contact. Conservation and stability of position and velocity constraints in discrete time. In *7th European Nonlinear Dynamics Conference (ENOC 2011)*, Rome, Italy, May 2011. EUROMECH.

[Co34] V. Acary. Higher order schemes for nonsmooth mechanical systems. In M. Arnold, R. Weiner, B.P. Sommeijer, and J. G. Verwer, editors, *"NUMDIFF-12" on Numerical Solution of Differential and Differential-Algebraic Equations*, Halle (Saale), Germany, 2009.

[Co35] V. Acary and B. Brogliato. Implicit Euler numerical simulation of sliding mode systems. In *Conference on Scientific Computing. Conference in honour of E. Hairer's 60th birthday*, Geneva, Switzerland, 2009. M. Gander, C. Lubich and G. Wanner.

[Co36] V. Acary, F. Cadoux, C. Lemarechal, and J. Malick. Second-order cone optimization for unilateral contact with Coulomb friction. In *5th Contact Mechanics International Symposium, CMIS 2009*, Chania, Greece, 2009.

[Co37] V. Acary. The Siconos software. A open–source software platform for the modeling, the simulation and the control of nonsmooth mechanical and electrical systems. In *Advanced COmputational Methods in ENgineering, ACOMEN 2008*, Liege, Belgium, 2008.

[Co38] V. Acary, H. Khenous, and F. Pérignon. Numerical Methods for 3D Coulomb's Friction based on Nonsmooth Newton's Method and Nonlinear Complementarity Formulations. In *ECCOMAS 2008*, Venise, Italy, July 2008.

[Co39] V. Acary, F. Cadoux, C. Lemarechal, and J. Malick. An algorithm for Coulomb's frictional contact. In *CANUM 2008. 39e Congrès National d'Analyse Numériqu*, Saint Jean de Monts, Vendée, France, 2008.

[Co40] V. Acary, F. Cadoux, C. Lemarechal, and J. Malick. A non-smooth optimization method for the friction problem in computational mechanics. In *SMAI,Groupe MODE*, Clermont-Ferrand, France, 2008.

[Co41] V. Acary. New event-capturing Time-Stepping Schemes with Higher resolution and order for Nonsmooth Multibody Systems. In *8th. World Congress on Computational Mechanics (WCCM8)*
5th European Congress on Computational Methods in Applied Sciences and Engineeering (ECCOMAS 2008), Venise, Italy, 2008.

[Co42] V. Acary. Investigations toward higher resolution time–stepping schemes for NonSmooth MultiBody Systems (NSMBS). In *CSMA Days, Computational structural Mechanics association*, Nantes, France, April 2008.

[Co43] V. Acary. Numerical methods and software for non smooth dynamical systems. the siconos platform. In *5th International School. Topics in nonlinear dynamics : Analysis, bifurcations and control of piecewise- smooth and hybrid dynamical systems*, Naples, September 2006. http://www.dis.unina.it:8080/pws-school/action.show?name=homePage.

[Co44] V. Acary and B. Brogliato. Simulation of higher-order linear complementarity systems: an extension of Moreau's sweeping process. In *Colloque en l'honneur du 80ème annivarsaire de Jean Jacques Moreau*, November 2003.

Reviewed national conferences

[CN1] V. Acary, M. Brémond, and F. Dubois. Méthodes de newton non–lisses pour les probleèmes de contact frottant dans les systeèmes de multi–corps flexibles. In *CSMA 2017 - 13e Colloque National en Calcul des Structures*, Giens, France, May 2017. CSMA.

[CN2] M. Haddouni, V. Acary, J.-D. Beley, and S. Garreau. Comparison of index-2 and index-1 DAE solvers for nonsmooth multibody systems with unilateral or bilateral constraints. In *CSMA 2013 - 11e Colloque National en Calcul des Structures*, Giens, France, February 2013. CSMA.

[CN3] Vincent Acary. Méthodes Numériques pour la simulation des systèmes multi-corps en présence de contact, de frottement et d'impacts. In *Plenary lecture at JNRR'09 - 7èmes Journées Nationales de la Recherche en Robotique*, Neuvy-Sur-Barangeon, France, November 2009.

[CN4] V. Acary and B. Brogliato. Toward a multiple impact law: the 3-ball chain example. In *6ème Colloque National en Calcul des Structures, GIENS 2003*, page 12p., Giens Var, France, 2003.

Main research and technical reports

[TR1] Alexandre Rocca, Vincent Acary, and Bernard Brogliato. Index-2 hybrid DAE: a case study with well-posedness and numerical analysis. Research report, Inria - Research Centre Grenoble – Rhône-Alpes, November 2019.

[TR2] J. Michalczyk, M. Brémond, V. Acary, and R. Pissard-Gibollet. Exomars Rover Mechanical Modeling with Siconos. Technical Report RT-0448, INRIA, July 2014.

[TR3] V. Acary, M. Brémond, T. Koziara, and F. Pérignon. FCLIB: a collection of discrete 3D Frictional Contact problems. Technical Report RT-0444, INRIA, February 2014.

[TR4] V. Acary and F. Pérignon. An introduction to Siconos. Technical Report TR-0340, INRIA, http://hal.inria.fr/inria-00162911/en/, 2007.

[TR5] V. Acary and Y. Monerie. Nonsmooth fracture dynamics using a cohesive zone approach. Research Report RR-6032, INRIA, 2006.

[TR6] P. Denoyelle and V. Acary. The non-smooth approach applied to simulating integrated circuits and power electronics. Evolution of electronic circuit simulators towards fast-SPICE performance. *INRIA Research Report 0321,* `http://hal.inria.fr/docs/00/08/09/20/PDF/RT-0321.pdf`, 2006.

[TR7] V. Acary and B. Brogliato. Coefficients de restitution et efforts aux impacts : Revue et comparaison des estimations analytiques. Research Report RR-5401, INRIA, 2004.

[TR8] V. Acary and M. Jean. Simulation numérique des édifices composés de blocs. Technical report, Rapport d'activité du projet collectif de recherche, Palais des Papes, 18 Décembre 1998.

Dissemination

[D1] Collectif. Les maths ont la bosse de l'industrie. *L'usine nouvelle*, 2011. Participation à la rédaction de l'article.

Patents

[P1] V. Acary, O. Bonnefon, and B. Brogliato. Improved circuit simulator. Patent number 09/02605, May 2009.

Seminar

- 16/11/2007. ETH Zürich.
  Investigations toward higher resolution time–stepping schemes for NonSmooth Multibody Systems (NSMBS)
- 10/04/2008 LAMCOS. Laboratoire de Mécanique des contacts et de structures. INSA. UMR CNRS 5259. Lyon.
  Autour de la dynamique non régulière : Méthodes d'intégration numérique et la plate-forme Siconos.
- 10/10/2008. LMGC. Laboratoire de Mécanique et de Génie Civil. UMR CNRS UMR 5508. Montpellier.
  Nonsmooth dynamical systems. Numerical time integration schemes and the Siconos platform
- 27/11/2012. LMA. Laboratoire de Mécanique et d'Acoustique. UPR CNRS 7050. Marseille.
  Une extension de type Newmark du schéma Moreau–Jean pour l'intégration de la dynamique en présence de contact et de frottement.
- 20/09/2013. XLIM. Institut de recherche. UMR CNRS 7252, Limoges.
  Une extension du schéma Moreau–Jean sur la base de schémas généralisés α pour l'intégration de la dynamique en présence de contact et de frottement.
- 02/04/2014. CMM. Center of Mathematical Modeling. Universidad de Chile. Santiago de Chile.
  Ordinary differential equations with discontinuous right-hand sides as complementarity systems. Application to gene regulatory networks.
- 02/04/2014. CMM. Center of Mathematical Modeling. Universidad de Chile. Santiago de Chile.
  Ordinary differential equations with discontinuous right-hand sides as complementarity systems. Application to gene regulatory networks.
- 18/05/2015. Centro de Innovación UC - Pontificia Universidad Católica de Chile. Jornada cientifica INRIA Chile.
  The nonsmooth contact dynamics method for the simulation of granular matter flows and fracture in mining applications
- 27/08/2015. CMM. Center of Mathematical Modeling. Universidad de Chile. Santiago de Chile.
  The nonsmooth contact dynamics method for the simulation of granular matter flows and fracture in mining applications
- 12/11/2015. Seminario del Departamento de Ingenieria Matematica. U. de Concepcion. Chile
  Modeling and simulation of mechanical systems with contact and friction within the nonsmooth contact dynamics framework. Possible applications in geosciences. Seminario del Departamento de Ingenieria Matematica. Universidad de Concepcion
- 08/09/2016 Fitfh symposium of the European network for nonsmooth dynamics (ENNSD). Université de Liège.
  An open question : How to solve efficiently 3D frictional contact problem ?
- 01/06/2017 Sixth symposium of the European network for nonsmooth dynamics (ENNSD). Eindhoven
  Improvements of the Moreau–Jean time integration scheme for multi-body systems with clearances and large rotations
- 18/01/2020. SIMAP/LJK/Institut Fourier. Grenoble, France. Matherials seminars.
  Time-Integration methods for nonsmooth contact dynamics with friction and impacts.
- 20-24/05/2019. Multibody Dynamics Workshop 2019. 2nd International Multibody Summer School, Parma, Italy.

- 15/06/2021 I was invited to give a keynote lecture at the académie de sciences in a "Conférences-débats de l'Académie des sciences . Travaux récents dans le sillage de Jean Jacques Moreau.".

- 05/2022. CMIS Contact Mechanics International Symposium (CMIS) Lausanne, Switzerland. Keynote Lecture

PhD Thesis supervisions

- Doh-Elvis Taha [November 2004 – September 2005; Inria - Scheider Electric grant. Withdrawal after one year. Co-supervisor Bernard Brogliato, amount of supervision involved: 50%] *Title: Modeling of multiple impacts in circuit breakers.* Associated publication with the student: [C18]
- Florent Cadoux [September 2006 – September 2009; "Ecole Polytechnique" grant. PhD thesis of the University Joseph Fourier- Grenoble I, defended on 26/11/2009. (now associate professor, titulaire de la chaire industrielle ERDF "smartgrids" at Fondation Partenariale Grenoble INP). Co-supervisor Claude Lemaréchal, amount of supervision involved: 50%] *Title: Optimization and convex analysis for nonsmooth dynamics.* Associated publications with the student: [A30, CiB5, A31, Co36, Co40, Co39]
- Olivier Huber [September 2011 – May 2015; "Allocataire Normalien" grant. Co-supervisor Bernard Brogliato, amount of supervision involved: 50%. PhD thesis of the University Joseph Fourier- Grenoble I, defended on 05/05/2015.] *Title: Discretization methods for sliding mode control.* Associated publications: [C9, C6, C7, A16, A17, CiB4]
- Mounia Haddouni [May 2012 – May 2015; CIFRE ANSYS grant. Co-supervisor Bernard Brogliato, amount of supervision involved: 80%. PhD thesis of the University Joseph Fourier- Grenoble I, defended on 27/05/2015] *Title: Algorithms for solving the dynamics of contact and friction.* Associated publications: [C10, CN2, **?**]
- Narendra Akhakdar [December 2012 – April 2016] ; Schneider Electric grant. Co-supervisor Bernard Brogliato, amount of supervision involved : 80%.] *Title: Numerical modeling of mechanisms. Influence of the clearances, the flexibility and the multiple impacts..* Associated publication: [Co23, **?**]
- Rami Sayoud [February 2018 – 2021] ; Schneider Electric grant. Co-supervisor Bernard Brogliato, amount of supervision involved : 50%.] *Title: Study of the propagation modes of seismic and vibrations solicitations in electrical switchboard and components.*
- Christelle Kozaily [September 2018 –] INRIA grant. IPL Modeliscale Co-supervisors Benoit Caillaud, Khalil Ghorbal (INRIA Rennes Bretagne Atlantique), amount of supervision involved : 30%.] *Title: Structural analysis of nonsmooth DAE systems*
- Charlélie Bertrand [September 2018 –] ; ITPE grant (Travaux publics de l'état, ENTPE). Co-supervisor Claude-Henri Lamarque (LTDS/ENTPE), amount of supervision involved : 50%.] *Title: Modeling, study and control of the dynamical behavior of a translating cable with punctual masses and frictional supports*
- Benoit Viano [September 2019 –] ; INRIA grant. Co-supervisor Franck Bourrier (INRAe), amount of supervision involved : 50%.] *Integration of block interaction with elasto-plastic deformable structures into non-smooth block propagation models.*
- Hoang Minh Nguyen [September 2021 –] ; INRIA grant. Co-supervisor Paul Armand (INRIA/U. Limoges), amount of supervision involved : 50%.] *Numerical optimization for frictional contact problems.*
- Louis Guillet [January 2023 –] ; INRIA grant. Co-supervisor Franck Bourrier (INRAe, TRIPOP) & Olivier Goury (INRIA Tripop), amount of supervision involved : 30%.]
- Florian Vincent [September 2023 –] ; INRIA grant. Co-supervisor Jérome Malick (CNRS LJK/U. Grenoble Alpes), amount of supervision involved : 50%.] .
- Mattéo Oziol [September 2023 –] ; G-INP grant. Co-supervisor T. Faug (INRAe), Franck Bourrier(INRAe, TRIPOP), amount of supervision involved : 30%.] *Numerical optimization for frictional contact problems.*

Supervision of doctoral internships and post-doctoral fellows

- Mathieu Renouf [post doc Bipop-Siames, October 2004 – September 2005; INRIA grant.] (now CNRS researcher at LMGC Montpellier.) Supervision ratio 100%. Publications: [C19, C15].
  The work of Mathieu Renouf concerned the comparison of numerical algorithms for frictional contact problems in a real–time context. This was carried out with the INRIA Project Team, Siames of IRISA where the post-doc spent 6 months.
- Houari Khenous [post-doc September 2006 – September 2007; INRIA grant.] (now research engineer IFPEN Paris). Supervision ratio 100%. Publication: [Co38].
  This post-doc concerned the optimization and the implementation in Siconos of semismooth Newton methods for solving frictional contact problems based on Nonlinear Complementarity Problems (NCP) formulations [B3].
- Carmina Georgescu [post-doc Octobre 2009 – Mars 2011 ; INRIA grant.] (now assistant professor University of Bucarest, Romania). Supervision ratio 50%. Publication: [A29]
  This joint post doc fellow with Hidde de Jong (INRIA Team project Ibis) concerned the numerical simulation of piecewise-linear models of gene regulatory networks using complementarity systems in Siconos.
- Thorsten Schindler [post-doc Novembre 2010 – Novembre 2011; ANR Saladyn grant.] (now associate professor. Lehrstuhl für Angewandte Mechanik. Technische Universität München). Supervision ratio 100%. Publications: [A20, Co28, Co31, Co32, A24].
  With Thorsten Schindler, we developed new event–capturing time–stepping schemes for non-smooth mechanical systems based on time discontinuous Galerkin methods.
- Scott Greenhalgh [PhD internship Septembre 2010 – Mai 2011; ANR Saladyn grant.] (former post-doc Yale University and now associate at Queen's University). Supervision ratio 50%. Publications: [Co30, A25].
  With Scott Greenhalgh who was in internship in our team as PhD candidate, we worked in the preservation of dissipation properties for linear complementarity systems when a time–discretization technique is used.
- Valentina Sessa [PhD internship Septembre 2012 – Février 2013; ANR Saladyn grant.] (now associate professor at IMPA, Rio de Janeiro, Brazil). Supervision ratio 100%. Publications: [C8, ?]. With Valentina Sessa who was in internship in our team as PhD candidate, we study and develop a numerical algorithm for computing periodic solutions of linear complementarity systems with applications to electrical circuits
- Bin Wang [post-doc Septembre 2012 –Septembre 2013; ANR Chaslim grant.] Supervision ratio 50%. Publications: [C5, A19]. The post doc of Bin Wang concerned the experimental validation of the implicit sliding mode control discretization on a experimental set-up located at IRCCYN (ECN, Nantes).
- Achref El Mansour [Inria granted by STRMTG Grenoble (2018- 2019, V. Acary, B.Brogliato)]. Numerical and analytical methods for translating cables.
- Alexandre Rocca [Inria granted by FUI Modeliscale (Dassault Systems) 2018-2020, V. Acary, B.Brogliato] *Nonsmooth cyberphysical systems*
- Mohammad Rasool Mojallizadeh [Inria, V. Acary, B.Brogliato 2019-2020] *Discrete sliding mode differentiators*
- Nicholas Collins Craft, [V. Acary, F. Bourrier 2020-] Inria granted by Projet Région Auvergne Rhone-Alpes (2020-2022, V. Acary, F. Bourrier) and since September 2022 granted by an European MSCA Fellowship LEMMA. *Cohesive models*
- Emilie Rouzies, [V. Acary, F. Bourrier March-May 2023] Inria granted *Sensitivity analysis*

Supervision of research internships

• Christophe Merle [DEA Mécanique/Stage de fin d'étude Ingénieur ESM2 February 2002–September 2002. Grant Schneider Electric] • Rami Ch'kir [DEA Mécanique/Stage de fin d'étude Ingénieur ESM2 February 2003–September 2003] • Alexandre Ravoux [DESS Génie informatique. January-June 2004; Grant Siconos] • Jean-Michel Barbier [DESS Génie informatique. January-September 2004; Grant Siconos] • Jérémie Blanc-Tranchant [DESS Génie informatique. January-June 2004; Grant Siconos] • Jean-Baptiste Charlety [DESS Génie informatique. January-June 2004; Grant Siconos] • Pascal Denoyelle [Master 2 IMSN. March–August 2005. Grant Siconos] • François Garrigues [ENSIMAG 4A. May– August. 2006 Grant Siconos] • Abdelaziz N'Diaye [ENSIMAG 2A May–July 2006. Grant Siconos] • Tomasz Toczek [ENSERG 2A. May–August 2006] • Walid Ben Romdhane [Ecole polytechnique de Tunisie. February–August 2008. Grant internship INRIA] • Hakim Majidi [Master 1 MAI Grenoble. April–July 2008] • Sulivan Hamard [ENSE^3 Stage de fin d'étude Ingénieur] • Jean–Nicolas Roussel [Ecole Polytechnique 2A. January–July 2015] • Thomas Lepoutre [Ecole Centrale Marseille. Stage césure. July–December 2015] • Charles-Édouard Ladari [Ecole Centrale Paris. Stage césure. September–December 2015] • Sebastian Maass [Universidad de Chile. January–March 2016] • Thomas Cadiergues [Ecole Centrale Paris. Stage césure. January–July 2016] • Felipe Garrido [Universidad de Chile. Master Thesis internship. January 2016 – March 2017] • Abdulhadi Abdlgwad, Izmir yüksek teknoloji University, Turkey Erasmus Internship (10/2017 – 04/2018, V. Acary, F. Bourrier) • Nicolas Molina Vergara, M1 internship, Pontificia Universidad Católica de Chile, Santiago (01-03/2018, V. Acary) • Thoi Thi Tran, M2 internship, Université de Limoges (03-08/2018, V. Acary) • Maksym Shpakovych, M2 internship, Université de Limoges (02-08/2019, V. Acary, P. Armand) • Nicolas Parent, Joel Andrepont, M1 internship, Université Grenoble Alpes (05-07/2019, V. Acary, F. Pérignon, M. Brémond) • Denise Cariaga Sandoval, M1 internship, Pontificia Universidad Católica de Chile. (12/2019 – 03/2020, V. Acary) • Camille Julliard, M1 internship, ENSTA Paris (05/2021–07/2021, A. Tonnelier V. Acary) • Marc Hétier, M1 internship, ENSIMAG (05/2021–07/2021, F. Bourrier, V. Acary) • Huu Duc Anh Nguyen, M2 internship, Polytech Lyon (02/2021–07/2021, F. Bourrier, V. Acary, T. Faug (Inrae)) • Johnny Godoy, M1 internship, University of Chile, Mathematical engineering department. INRIA Chile partnership. (01/2023–04/2023, V. Acary, P. Armand) • Moustapha Adiouane, M1 internship, ENSIMAG (05–09/2023)

Supervision of non permanent research and development engineers.

• Jean-Michel Barbier [October 2004 – April 2005; Grant Siconos] • Jean-Baptiste Charlety [October 2004 – April 2005; Grant Siconos] (now software quality engineer at EMC). • Pascal Denoyelle [September 2005 — February 2008; Grant Ingénieur spécialiste INRIA] (now R&D engineer Mentor Graphics). • Franck Perignon [April 2005 – September 2008; Grant Siconos] (now CNRS research engineer). • Olivier Bonnefon [January 2007 – August 2009 ; Grant VAL-AMS; September 2009 – August 2011 Grant Saladyn] (now INRA research engineer). • Laurent Schiavon [January – March 2009 ; Grant Saladyn] (R&D engineer, OPEN Saint Egrève) • Hong Ha Do Nguyen [January – December 2012; Grant Saladyn] (R&D engineer Singapore.) • Jan Michalcsyk [September 2012 – September 2014; Grant ADT INRIA] (now Expert Engineer INRIA.) • Maximiliano Olivares [April 2015 – ; INRIA Chile engineer] (now Expert Engineer INRIA.) • Stephen Sinclair [December 2015 – ; Grant ADT INRIA]

Supervision/Collaboration with permanent research engineers

- Franck Pérignon, IR CNRS. Laboratory LJK. With Franck Pérignon, I work partly on refactoring of the foundation of Siconos since 2008 and the computation of waves propagation and periodic solutions with impact [Co25] since 2013.
- Maurice Brémond, IR INRIA Grenoble. M. Brémond is the main engineer in Siconos in charge of maintenance, support and packaging. He also made great contributions to siconos for the functionalities and the architecture.
- Samuel Heidmann, IR INRIA Grenoble. M. Brémond is the second main engineer in Siconos in charge of maintenance, support and packaging.

PhD thesis Jury

- Hadia Ramal. Université de Limoges, *"Problèmes de complémentarité aux valeurs propres : théorie, algorithme et applications"* supervised by Samir Adly. 19/09/2013. Examinator
- Thomas Catterou, Universite Aix–Marseille. *Étude numérique et expérimentale du comportement dynamique non linéaire d'un réseau de tubes avec jeux - application aux faisceaux d'aiguilles combustibles RNR* supevised by Bruno Cochelin, Centrale Marseille / LMA. president 22/10/2018,
- Clara Issanchou. Université Pierre et Marie Curie *Vibrations non linéaires de cordes avec contact unilatéral. Application aux instruments de musique.* supervised by Jean-Loïc Le Carrou and Cyril Touzeé. Examinator. 25/09/2017
- Loic Dugelas. Université Grenoble Alpes. *Stratégies probabilistes appliquées à la modélisation numérique discrète : le cas des filets pare-pierres* supervised by Franck Bourrier and Francois Nicot. 10/01/2020. President.
- Javier Galvez. Université de Liège. *Numerical simulation of frictional contact problems in flexible multibody dynamics* supervised by Olivier Brüls. 22/06/2020. Referee.
- Agathe Furet. Université Grenoble Alpes. *Modélisations expérimentale et numérique d'ouvrages pare-blocs modulaires : Application à la technologie Bloc Armé* supervised by Stéphane Lambert and Pascal Villard. 27/08/2020. President.
- Marianne Souaiby. INSA Toulouse/LAAS. *Lyapunov functions and ensemble approximations for constrained systems using semi-definite programming"* supervised by Aneel Tanwani and Didier Henrion. 15/10/2021. Referee.
- Xiashu Ma (Univ Aix-Marseille, 06/2022), rapporteur
- Maksym Shpakovych (Univ. Limoges 12/2022), examinateur

HdR Jury

- David Bertrand (Insa de Lyon, 06/2023), rapporteur

Foreign Jury of Master Thesis

- Matteo Fancello. "A Co-Simulation Approach for Mixed Smooth and Nonsmooth Dynamics in Multibody Problems". Politecnico di Milano, Facoltà di Ingegneria Industriale, Corso di Laurea di Ingegneria Spaziale. Tesi di Laurea. 2012. Reviewer

Colloquia and summer school organizations

- 2005. Siconos/DaVinci conference. INRIA Rhône-Alpes, July 8–9 2005, Grenoble France
- 2005. CEA-INRIA-EDF school[1]. *Nonsmooth Dynamical Systems. Analysis, Control, Simulation and Applications.* June 29–02 2006. INRIA Rocquencourt, France.
- 2010. Summer School INRIA[2]. *Nonsmooth Contact Mechanics: Modeling and Simulation* June 14–18 2010 Centre Paul Langevin, Aussois, France
- 2012. EUROMECH Colloquium [516][3]. *Nonsmooth contact & impact laws in mechanics.* July 6th - 8th 2011 Grenoble, France
- 2012. Summer School INRIA[4]. *Nonsmooth Contact Mechanics: Modeling and Simulation* September 9–14 2012 Centre Paul Langevin, Aussois, France
- 2014. WCCM-ECCM-ECFD conference[5]. Co-organizer with Mathias Legrand of a mini-symposium

[1] http://www.inrialpes.fr/bipop/schoolnonsmooth/
[2] http://www.inrialpes.fr/bipop/NonSmoothMechanicsSeminars/BipopSpringSchool2010/index.html
[3] http://www.inrialpes.fr/bipop/NonSmoothMechanicsSeminars/Euromech2011/index.html
[4] http://www.inrialpes.fr/bipop/NonSmoothMechanicsSeminars/BipopSummerSchool2012/index.html
[5] http://www.wccm-eccm-ecfd2014.org/admin/Files/FileAbstract/a154.pdf

entitled Nonsmooth Dynamics and Vibrations. July 20–25 2014, Barcelona, Spain.

- 2014. Worshop BIRS Center[6]. co-organizer with Robert Bridson (University of British Columbia), Danny Kaufman (Adobe Research), Jong-Shi Pang (University of Southern California), and Jeff Trinkle (Rensselaer Polytechnic Institute). *Computational Contact Mechanics: Advances and Frontiers in Modeling Contact (14w5147).* February 16–21 2014. The Banff International Research Station (BIRS) for Mathematical Innovation and Discovery. Baff, Alberta, Canada.

- 2017. Symposium MS-10 Non-Smooth Dynamics co-organized with Claude-Henri Lamarque, Ecole Nationale des Travaux Publics de l'Etat and Remco Ingmar Leine, University of Stuttgart. Organization of the call for papers, review process and chairman.
http://congressline.hu/enoc2017/minisymposia.php

- 2020+2. Symposium MS-10 Non-Smooth Dynamics co-organized with Olivier Brüls, Université de Liège and Remco Ingmar Leine, University of Stuttgart. Organization of the call for papers, review process and chairman.
https://enoc2020.sciencesconf.org

- 2024. ENOC. Symposium MS-10 Non-Smooth Dynamics co-organized with Olivier Brüls, Université de Liège and Remco Ingmar Leine, University of Stuttgart. Organization of the call for papers, review process and chairman.
https://enoc24.dryfta.com/index.php

Participation in membership on editorial boards of conference

- [2012–] **Member of the EUROMECH Nonlinear Oscillations Conference Committee** (ENOC Committee[7])[selection of the location of the conference, organization of the review process, choice of the plenary lectures, the mini-symposium, the best paper award].
Presently, ENOCs are the largest, high-quality, scientific events in the broad area of nonlinear dynamics not only in Europe but on a worldwide basis. Since 1992, the European Mechanics Society (EUROMECH) organizes European Nonlinear Oscillations Conferences (ENOCs) through the European Nonlinear Oscillations Conference Committee (ENOCC). Actually, these events have a much longer tradition, since they are successors of the former ICNO (International Conference on Nonlinear Oscillations) series held from 1961 to 1990 in East-European countries. Starting from the 1st International Conference on Nonlinear Oscillations in Kiev, 1961, twelve ICNOs were organized till 1990. Then, starting with the 1st European Nonlinear Oscillations Conference in Hamburg, 1992, height ENOCs were organized till 2014 (Prague, Copenhagen, Moscow, Eindhoven, St. Petersburg, Rome, Wiena).

- **Member of the CMIS 2024 program committee** The Contact Mechanics International Symposium (CMIS) aims at gathering researchers interested in a broad range of topics in theoretical, mathematical, computational and experimental aspects of contact mechanics. This is the most important event for the contact mechanics community https://cmis2024.sciencesconf.org

- **Member of the ICCCM 2023 program committee** The aim of the conference is to provide an international forum for researchers, practitioners and for all the scientists who are concerned with modern computational techniques and applications in the field of contact mechanics. https://conference.unisalento.it/ocs/index.php/icccm2023/icccm2023

Scientific animation & editorial activities

- **Co-founder and animator of the European network for nonsmooth dynamics** [8]
The goals of the European network for nonsmooth dynamics are: to provide a cooperation platform for researchers specialized in nonsmooth dynamics, to promote the research focussed on nonsmooth dynamics and its applications, to improve networking activities (summer school, workshops or conferences), to disseminate the knowledge from the academic community to

[6] https://www.birs.ca/events/2014/5-day-workshops/14w5147
[7] http://enoc2014.conf.tuwien.ac.at/index.php/committees
[8] http://ennsd.gforge.inria.fr/

industry. The network organizes a two-days symposia each year with 8 up to 10 long talks. The network also coordinates proposition of mini-symposia in the main conferences of the domain.

Administrative tasks inside INRIA

- Member of the CTP INRIA (Comité Technique Paritaire (CTP))[2006–2011] and then member of the CTI (Comité Technique INRIA (CTP))[2011–2014]
- Member of the center's committee of INRIA Grenoble [2007-2011]
- Member of the CLFP (Commission Locale Formation Permanente) [2011–2014]
- Member of the IES national committee (Commission nationale information et édition scientifique, référent pour le centre de Grenoble) [2019–]
- Coordinator of the IES local committee (Commission locale information et édition scientifique) [2019–]
- Scientific referent for the budget of INRIA center of Grenoble Alpes university [2022–]

Reviews of projects

- Reviewer for the National Science foundation (NSF, USA), the Netherlands Organisation for Scientific Research (NWO) and the Swiss National Science Foundation (SNSF).

Year	Teaching	Hours	Level	Where
2016-2023	Nonsmooth dynamical systems	18H Cours/TD	Ensimag 2A	Université de Grenoble Alpes
2013-2018	Nonsmooth dynamical systems simulation	9H Cours/TD	Master 2 recherche ACSYON	Université de Limoges
2004-2009	Mathematics for Physics Femlab	30H Cours 18H TD	Master 2 Pro IMSN	Grenoble UFR IMAG.
2004-2006	Numerical Optimization	18 H TD	2ème année	Grenoble ENSIMAG
2002-2003	Numerical analysis	30H Cours	DESS modélisation Numerical Simulation	Grenoble UFR de Physique
2001-2002	Mechanical Vibrations Mechanical Vibrations Mathematics for engineers	16H TD 12H TD 27H TD	IUT GMP 2ème année Maîtrise mécanique UJF DEUG STPI 2ème année	Grenoble UFR de Mécanique UFR IMAG
2000-2001	Continuum Mechanics	20H TD	ESIM 1ère année	Marseille
1999-2000	Continuum Mechanics Numerical Methods Projects supervision (12)	20H TD 24 H TD 24 H TD	ESIM 1ère année ESIM 2ème année ESIM 2ème année	Marseille
Summer school and professional education				
2005	Nonsmooth Dynamical Systems. Simulation and Applications	6H	Summer school CEA-INRIA-EDF. Rocquencourt	
2006	Numerical methods and software for non smooth dynamical systems.	6H	Summer school Topics in Nonlinear Dynamics. Naples	
2010, 2012	Nonsmooth Mechanical Systems. Modeling and simulation	9H	Summer school INRIA. Aussois	
2013 2019	Nonsmooth Mechanical Systems. Modeling and simulation Nonsmooth Mechanical Systems. Modeling and simulation	6H 3H	ANSYS internal formation. Lyon GdR MOA, Rennes	

Fait à Montbonnot le October 12, 2023

Vincent Acary