

## Stephane Redon

Date of Birth: August, 17, 1975

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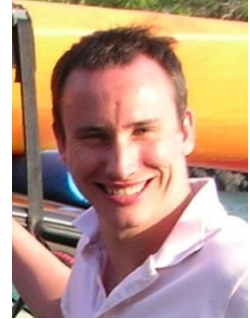
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### Address:

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April, 10, 2017

## Appointments

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- 01/08- : INRIA: Research Scientist, head of the NANO-D group**
- 09/09- : Ecole Polytechnique: Instructor (part-time), Computer Science Department**
- 03/05-12/07: INRIA: Research Scientist, member of the i3D team**
- 12/02-03/05: University of North Carolina at Chapel Hill: Post-Doctoral Research Associate**  
*Member of the GAMMA team, headed by Pr. Lin and Pr. Manocha (<http://gamma.cs.unc.edu>)*

## Education

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- 09/99-10/02 : INRIA – Rocquencourt: Ph.D.**  
*Dissertation title: Algorithms for interactive dynamics simulation of rigid bodies*  
*Advisors: Dr. Sabine Coquillart and Dr. Abderrahmane Kheddar*  
*Honored with the **congratulations of the board***
- 09/98-09/99 : Paris VI: D.E.A. (Master's degree)**  
*Specialties: Computer Graphics and Cryptography*  
*Internship at INRIA-Rocquencourt with Dr. Sabine Coquillart*  
*Project: Continuous collision detection for rigid polyhedral objects*
- 09/95-09/98 : Ecole polytechnique: Engineer degree (X 1995)**  
*3<sup>rd</sup> year: Specialization in Computer Graphics and Economy*  
*2<sup>nd</sup> year: Common-core syllabus, then specialization in Mathematics and Economy*  
*1<sup>st</sup> year: Military duty at ESM Saint-Cyr (assistant to the Head of Communication Services)*

## Recent Projects and Collaborations

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- **Principal Investigator of the SAMSON project (ERC Proof of Concept 2015).**

- **Principal Investigator of the ADAPT project (ERC Starting Grant 2012).**
- **Scientific Coordinator of the NANO-D project (ANR Jeunes Chercheurs Jeunes Chercheuses 2010).**
- **Scientific Partner in the ICCR project (ANR PIRIBio 2009).** Project coordinated by Dr. Michel Vivaudou at IBS, in collaboration with Dr. Serge Crouzy, bio-physicist at CEA, and Dr. Franck Fieschi, biologist at IBS. “Ion-Channel Coupled Receptors (ICCR): Protein-based bioelectric sensors for the study of G-protein-coupled receptors”.
- **Scientific Coordinator of the SAMSON project (ANR COSINUS 2008).** Project in collaboration with Dr. Christian Joachim and Dr. Xavier Bouju at CEMES, Dr. Serge Crouzy CEA/LCBM, Dr Martin J. Field at IBS, and Dr. Thierry Deutsch and Frederic Lançon at CEA/SP2M. “SAMSON: System for Adaptive Modeling and Simulation Of Nano-objects”.
- **Scientific Coordinator of the AMUSIBIO project (ANR MDMSA 2005).** Project in collaboration with Dr. Serge Crouzy, bio-physicist at CEA, and Dr. Michel Vivaudou, biologist at CEA. “AMUSIBIO: an Adaptive, Multiscale Approach for Interactive Simulation and Modeling of Complex Biological Molecules”.
- **Scientific Coordinator (French Side), EGIDE Integrated Action Program STAR,** in collaboration with Pr. Young J. Kim (Ewha Womans University, Korea). “Adaptive Simulation of Articulated Bodies with Force-Feedback”.
- **University of North Carolina (R. Gayle, A. Sud, M. C. Lin and D. Manocha)** – dynamics and planning.
- **Computer Graphics Laboratory at ETH Zurich (M. A. Otaduy)** – dynamics of deformable bodies.

## Teaching and Popularization

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- **Ecole polytechnique, France:** *Computational nanoscience with SAMSON, 2016-2017 (32h per year).*
- **Ecole polytechnique, France:** *Programming C++, undergrad, 2013-2017 (36h per year).*
- **Ecole polytechnique, France:** *Big data, undergrad, 2014-2016 (36h per year).*
- **Ecole polytechnique, France:** *Algorithms and Programming, undergrad, 2013-2014 (40h).*
- **Ecole polytechnique, France:** *Principles of Programming Languages, undergrad, 2006-2013 (80h / year).*
- **Ecole polytechnique, France:** *Principles of Programming Languages, undergrad, 2005-2006 (40h).*
- **ENSIMAG, France:** *Virtual Reality, undergrad, 2006-2007 (18h).*
- **UNC Chapel Hill, USA:** *Dynamics Simulation, grad., 2003 (4h).*
- **Ecole Centrale de Paris, France:** *Introduction to Algorithms, undergrad, 2002 (10h).*
- **Evry University, France:** *Introduction to Signal Processing, undergrad, 1999-2000 (70h).*
- **Aventure Scientifique (scientific summer camps – camp counselor).** *Simplified introductions to Computer Graphics, Quantum Mechanics, Restraint and General Relativity, and Game Theory. 2001 and 2002 (40h).*

## Software

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- **SAMSON**: Software platform for computational nanoscience: <https://www.samson-connect.net>
- **CONTACT** (CONTInuous and Accurate Collision Tracking): Continuous collision detection library for rigid polyhedral objects.
- **CONTACT Toolkit**: Library for interactive dynamics simulation of rigid bodies, integrating CONTACT and rigid body dynamics algorithms - **patent n° FR0203253**. The libraries CONTACT and CONTACT Toolkit are deposited at the **Agency for the Protection of Programs**. The dynamics simulation library CONTACT Toolkit has been successfully tested on industrial databases from **Airbus-EADS**, **Renault**, and **PSA-Citroën**.
- **CONTACT Prototyping**: Virtual prototyping application based on CONTACT Toolkit.
- **CULLIDE**: Graphics-hardware based discrete collision detection library.
- **AVATAR**: Continuous collision detection library for avatars in virtual environments.
- **ARTICULATE**: Continuous collision detection library for general articulated polyhedral models.
- **AQ**: Library for adaptive quasi-statics of articulated bodies.
- **AD**: Library for adaptive dynamics of articulated bodies.
- **AMGDeform**: Library for adaptive deformable dynamics (collaboration with M.A. Otaduy).
- **VDDToolkit**: Library for view-dependent articulated-body dynamics (collaboration with Y. J. Kim).

### Software engineers (Current and Past)

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- Yassine Naimi
- Nadhir Abdellatif
- Mohamed Yengui
- Maria Werewka
- Svetlana Artemova
- Jocelyn Gaté
- Noëlle le Delliou
- Evelyne Altariba

### Post-docs (Current and Past)

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- Dmitriy Marin
- Clément Beitone
- Marc PiuZZi
- Léonard Jaillet
- Sergei Grudin

### Ph.D. Students (Current and Past)

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- Sémého Eдорh
- François Rousse
- Krishna Kant Singh (with Jean-François Méhaut, IMAG)
- Zofia Trstanova (with Gabriel Stoltz, CERMICS)
- Maël Bosson (with Brigitte Bidégaray, LJK)

- Svetlana Artemova
- Michael Ortega (direction Sabine Coquillart, INRIA)
- Karthik Arumugam (direction Serge Crouzy, CEA)

## **Interns (Current and Past)**

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- Guillaume Pagès (Ecole polytechnique, Paris, France)
- Himani Singhal (Indian Institute of Technology Bombay)
- Jelmer Wolterink (Utrecht University, Netherlands)
- Ahmad Shahwan (Grenoble University, France)
- Maël Bosson (with Serge Crouzy, CEA, France)
- Bing Xue
- Caroline Richard
- Aude Bolopion (with Stephane Regnier, ISIR, France)
- Arnaud Cavailleux
- Sujeong Kim (with Young J. Kim, EWHA Womans University, Korea)
- Yeon-Hee Lee (with Young J. Kim, EWHA Womans University, Korea)
- Romain Rossi
- Kaspar Schüpbach (with Miguel A. Otaduy, ETH Zürich)
- Sandy Morin
- Didier François

## **Ph.D. Committees (“Examinateur”)**

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- Matthieu Chavent
- Bruno Daunay
- Didier Devaurs
- Matthieu Dreher
- Christian Duriez
- Maher Hatab
- Aude Giard
- Thomas Larsson (“Opponent”)
- Damien Marchal

## **Chairing – Organization**

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- Organizing Committee Member, JOBIM 2016
- Organizing Committee Member, Forum GRAVIT 2008 (“Modélisation”).
- Organizing Committee Member, GGMM 2007 (“Groupe de Graphisme et Modélisation Moléculaire”)
- Co-Chair, Workshop/Tutorials, EuroHaptics 2006 (with Young J. Kim, EWHA)
- Session Chair at the IEEE International Conference on Robotics and Automation (2005)

## **Program Committees**

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- Shape Modeling International 2012 (SMI 2012)
- SIAM Conference on Geometric and Physical Modeling 2011 (GD/SPM 2011)
- Workshop on the Algorithmic Foundations of Robotics 2010 (WAFR 2010)
- ACM Solid and Physical Modeling Symposium 2010 (SPM 2010)
- Robotics: Science and Systems 2010 (RSS 2010)
- Computer Animation and Social Agents 2010 (CASA 2010)
- ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2009 (SCA 2009)

- International Symposium on Visual Computing 2009 (ISVC 2009)
- Robotics: Science and Systems 2009 (RSS 2009)
- Computer Animation and Social Agents 2009 (CASA 2009)
- SIAM/ACM Joint Conference on Geometric and Physical Modeling 2009 (GPM 2009)
- ACM Symposium on Virtual Reality Software and Technology 2008 (VRST 2008)
- Computer Graphics International 2008 (CGI 2008)
- ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2008 (SCA 2008)
- International Workshop on Interactive Digital Entertainment Technologies 2008 (IDET 2008)
- Robotics: Science and Systems 2008 (RSS 2008)
- Computer Animation and Social Agents 2008 (CASA 2008)
- ACM Solid and Physical Modeling Symposium 2008 (SPM 2008)
- Geometric Modeling and Processing 2008 (GMP 2008)
- International Conference on Computer Graphics Theory and Applications 2008 (GRAPP 2008)
- ACM Symposium on Virtual Reality Software and Technology 2007 (VRST 2007)
- ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2007 (SCA 2007)
- International Conference on Computer Graphics Theory and Applications 2007 (GRAPP 2007)
- ACM Solid and Physical Modeling Symposium 2007 (SPM 2007)
- Geometric Modeling and Processing 2006 (GMP 2006)
- Computer Graphics International 2006 (CGI 2006)
- ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2006 (SCA 2006)
- EuroHaptics 2006 (EH 2006)
- Pacific Graphics 2005 (PG 2005)

## **Reviewer – International Journals**

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- BMC Structural Biology
- Computer-Aided Design
- Computer and Graphics
- Computer Graphics Forum
- IEEE Computer Graphics and Applications
- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Haptics
- IEEE Transactions on Robotics
- IEEE Transactions on Visualization and Computer Graphics
- International Journal of Human-Computer Studies
- International Journal of Product Development
- Presence
- Proceedings A of the Royal Society
- Virtual Reality Journal (Springer Verlag)
- Visual Computer (Springer Verlag)

## **Reviewer – National Journals**

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- Technique et Science Informatiques

## **Reviewer – International Conferences**

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- Workshop on Virtual Reality Interaction and Physical Simulation (2014)
- ACM SIGGRAPH (2006, 2007)
- ACM SIGGRAPH Asia (2009)
- ACM SIGGRAPH / Eurographics Symposium on Computer Animation (2003-2007)
- ACM Symposium on Virtual Reality Software and Technology (2003-2004, 2007)

- Computer Animation and Social Agents Conference (2004)
- Computer Graphics International (2004-2005)
- Eurographics (2002-2005, 2009)
- Eurographics Symposium on Virtual Environments (2006)
- Haptex (2005)
- Haptics Symposium (2004, 2008)
- IEEE International Conference on Intelligent Robot and Systems (2003, 2006)
- IEEE International Conference on Robotics and Automation (2007-2010)
- IEEE Virtual Reality Conference (2006, 2008)
- IEEE Visualization (2004-2005)
- IEEE Workshop on Robot-Human Communication (2001)
- International Conference on Computer Graphics, Visualization and Computer Vision (2004, 2006, 2007)
- International Workshop on the Algorithmic Foundations of Robotics (2004)
- Robotics: Science and Systems (2007)
- World Haptics (2007)

### **Reviewer – National Research Agency (ANR) – France**

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- ANR OH-Risque (2015)
- ANR Modèles Numériques (2012)
- ANR CONTINT (2010)
- ANR Blanc (2010)
- ANR COSINUS (2009)

### **Reviewer – Assistant Professor positions (“Maître de conférences”)**

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- MCF 26 INPG (2009)

### **Fondation Nanosciences (Grenoble – France)**

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- Member of the Steering Committee

### **INRIA**

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- Member of the Training Committee
- Member of the Scientific Employment Committee (CES: “Commission Emploi Scientifique”)

### **Past Professional Activities**

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- Research Engineer (November 2002). Participation in the GANTOM project on assisted scanning and texturing of museum objects, in collaboration with Julian Aubourg, under the supervision of Philippe Fuchs. Center of robotics of the Ecole des Mines de Paris. November 2002. ARMINES Contract.

### **Awards, Media**

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- **ERC Proof of Concept Grant 2015**
- **ERC Starting Grant 2012**
- **2<sup>nd</sup> Best Paper Award**, IEEE Virtual Reality Conference, for the paper “A Six Degree-of-Freedom God-Object Method for Haptic Display of Rigid Bodies”, 2006.

- “Nouveaux outils pour la simulation temps réel”, Press article (in French), Harvest 93 - 27/12/2005, featuring our research on continuous collision detection, and applications to virtual prototyping.
- “Fête de la Science à l’INRIA”, featured in the radio report, Radio, France-Bleue Isère, October 2005.

## Book Chapters

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- [1] S. Redon. “Modélisation et simulation adaptatives pour les nanosciences”. In *“Modéliser & Simuler. Epistémologies et pratiques de la modélisation et de la simulation, tome 2”*, Éditions Matériologiques. In Press.
- [2] S. Redon. “Molecular Geometry Optimization – Algorithms”. *Encyclopedia of Applied and Computational Mathematics*, Springer-Verlag, in Press.
- [3] S. Redon. “Continuous Collision Detection”. In *“Haptic Rendering: Foundations, Algorithms and Applications”*, Editors M. C. Lin and M. A. Otaduy, A. K. Peters, Ltd. 2008.
- [4] M. Ortega, S. Redon and S. Coquillart. “Six Degree-of-Freedom Rendering of Rigid Environments”. In *“Haptic Rendering: Foundations, Algorithms and Applications”*, Editors M. C. Lin and M. A. Otaduy, A. K. Peters, Ltd. 2008.

## Referred international journal publications (IF: Impact Factor, when available)

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- [5] Minh Khoa Nguyen, Leonard Jaillet and Stephane Redon. “As-Rigid-As-Possible molecular interpolation paths”. *Journal of Computer-Aided Molecular Design*, 2017. (IF: 3.1).
- [6] Zofia Trstanova and Stephane Redon. “Estimating the speed-up of Adaptively Restrained Langevin Dynamics”. *Journal of Computational Physics*, 2017. (IF: 2.4).
- [7] Stephane Redon, Gabriel Stoltz, Zofia Trstanova. “Error Analysis of Modified Langevin Dynamics”. *Journal of Statistical Physics*, Springer Verlag, 2016. (IF: 1.5).
- [8] S. Artemova, L. Jaillet and S. Redon. “Automatic molecular structure perception for the universal force field”. *Journal of Computational Chemistry*. March 2016. (IF: 3.5).
- [9] Pierre-Luc Manteaux, Chris Wojtan, Rahul Narain, Stéphane Redon, François Faure, Marie-Paule Cani. “Adaptive Physically Based Models in Computer Graphics”. *Computer Graphics Forum*, Wiley, 2016. (IF: 1.5).
- [10] M. P. Haag, A. C. Vaucher, M. Bosson, S. Redon, M. Reiher. “Interactive Chemical Reactivity Exploration”. *ChemPhysChem*, Wiley-VCH Verlag, 2014, 15 (15), pp.3301-3319. (IF: 3.4).
- [11] S. Artemova and S. Redon. “Adaptively Restrained Particle Simulations”. *Physical Review Letters*. 109 (19), 190201. (IF: 7.9).
- [12] M. Bosson, S. Grudinin and S. Redon. “Block-Adaptive Quantum Mechanics: an adaptive divide-and-conquer approach to interactive quantum chemistry”. *Journal of Computational Chemistry*. Volume 34, Issue 6, pages 492–504, 5 March 2013. (IF: 3.5).
- [13] M. Bosson, C. Richard, A. Plet, S. Grudinin and S. Redon. “Interactive quantum chemistry: a divide-and-conquer ASED-MO method”. *Journal of Computational Chemistry*. Volume 33, Issue 7, pp. 779–790. (IF: 3.5).

- [14] M. Bosson, S. Grudinin, X. Bouju and S. Redon. "Interactive physically-based structural modeling of hydrocarbon systems". *Journal of Computational Physics*. Volume 231, Issue 6, pp. 2581–2598. (IF: 2.3).
- [15] S. Artemova, S. Grudinin and S. Redon. "A comparison of neighbor search algorithms for large rigid molecules". *Journal of Computational Chemistry*. Volume 32, Issue 13, pp. 2865-2877. (IF: 3.5).
- [16] S. Artemova, S. Grudinin and S. Redon. "Fast construction of assembly trees for molecular graphs". *Journal of Computational Chemistry*. Volume 32, Issue 8, pp. 1589-1598. (IF: 3.5).
- [17] A. Bolopion, B. Cagneau, S. Redon and S. Regnier. "Comparing position and force control for interactive molecular simulators with haptic feedback". In *Journal of Molecular Graphics and Modelling*. Volume 29, Issue 2, September 2010, pp. 280-289. (IF: 2.3).
- [18] S. Grudinin and S. Redon. "Practical modeling of molecular systems with symmetries". *Journal of Computational Chemistry*. Volume 31, Issue 9, pp. 1799-1814. (IF: 3.5).
- [19] S. Kim, S. Redon and Y. J. Kim. "View-dependent dynamics of articulated bodies". *Computer Animation and Virtual Worlds*, 2008 19(3-4), pp. 223-233. (Special Issue CASA 2008) (IF: 0.6).
- [20] S. Kim, S. Redon and Y. J. Kim. "Continuous Collision Detection for Adaptive Simulation of Articulated Bodies". *The Visual Computer*, 2008 24(4), pp. 261-269. (IF: 0.7).
- [21] R. Rossi, M. Isorce, S. Morin, J. Flocard, K. Arumugam, S. Crouzy, M. Vivaudou, and S. Redon. "Adaptive torsion-angle quasi-statics: a general simulation method with applications to protein structure analysis and design". *Bioinformatics* 2007 23(13):i408-i417 (ISMB/ECCB 2007). (IF: 4.9).
- [22] X. Zhang, S. Redon, M. Lee and Y. J. Kim. "Continuous Collision Detection for Articulated Models using Taylor Models and Temporal Culling". In *ACM Transactions on Graphics (SIGGRAPH 2007)*, 26(3), 2007. (IF: 4.1).
- [23] Y. J. Kim, S. Redon, M. C. Lin, D. Manocha and J. Templeman. "Interactive Continuous Collision Detection using Swept Volume for Avatars". In *Presence: Teleoperators and Virtual Environments*, 16, 2 (Apr. 2007), 206-223, MIT Press. (IF: 1.0).
- [24] M. Ortega, S. Redon and S. Coquillart. "A Six Degree-of-Freedom God-Object Method for Haptic Display of Rigid Bodies with Surface Properties". In *IEEE Transactions on Visualization and Computer Graphics*, Vol. 13, No. 3, pp. 458-469, 2007. (IF: 1.8).
- [25] S. Redon and M. C. Lin. "An Efficient, Error-Bounded Approximation Algorithm for Simulating Quasi-Statics of Complex Linkages". In *Computer-Aided Design*, 38 (2006) 300-314, Elsevier. (IF: 1.4).
- [26] S. Redon, N. Galoppo and M. C. Lin. "Adaptive Dynamics of Articulated Bodies". In *ACM Transactions on Graphics (SIGGRAPH 2005)*, 24(3), 2005. (IF: 4.1).
- [27] S. Redon, Y. J. Kim, M. C. Lin and D. Manocha. "Fast Continuous Collision Detection for Articulated Models". In *Journal of Computing and Information Science in Engineering*, 5(2), 2005. (IF: 0.5).
- [28] S. Redon and M. C. Lin. "A Fast Method for Local Penetration Depth Computation". In *Journal of Graphics Tools*, Vol. 11, No. 2: 37-50 (2006).
- [29] S. Redon. "Fast Continuous Collision Detection and Handling for Desktop Virtual Prototyping". In *Virtual Reality* 8(1): 63–70, 2004. Springer Verlag Editors.
- [30] S. Redon, A. Kheddar and S. Coquillart. "Fast Continuous Collision Detection between Rigid Bodies". In *Computer Graphics Forum* 21(3): (2002) (Proceedings of Eurographics 2002). (IF: 1.2).



## Referred international conference publications

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- [31] S. Redon. "Editing molecular structures with smoothed articulated-body accelerations". *In Proceedings of the Workshop on Robotics Methods for Structural and Dynamic Modeling of Molecular Systems – Robotics Science and Systems (2014)*.
- [32] P.-L. Manteaux, F. Faure, S. Redon and M.-P. Cani. "Exploring the Use of Adaptively Restrained Particles for Graphics Simulations". *In Proceedings of the 10th Workshop on Virtual Reality Interaction and Physical Simulation (2013) pp. 17-24 (VRIPHYS 2013)*.
- [33] A. Bolopion, B. Cagneau, S. Redon and S. Regnier. "Adaptive haptic coupling for molecular simulation". *In Proceedings of IEEE World Haptics Conference (WH 2011)*.
- [34] A. Bolopion, B. Cagneau, S. Redon and S. Regnier. "Haptic molecular simulation based on force control". *In Proceedings of IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2010)*.
- [35] A. Bolopion, B. Cagneau, S. Redon and S. Regnier. "Haptic feedback for adaptive molecular simulation". *In Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2009)*.
- [36] M. A. Otaduy, D. Germann, S. Redon and M. Gross. "Adaptive Deformations with Fast Tight Bounds". *In Proceedings of ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA 2007)*.
- [37] S. Morin and S. Redon. "A Force-Feedback Algorithm for Adaptive Articulated-Body Dynamics Simulation". *In Proceedings of IEEE International Conference on Robotics and Automation (ICRA 2007)*.
- [38] R. Gayle, A. Sud, S. Redon, M. C. Lin and D. Manocha. "Efficient Motion Planning of Highly Articulated Chains using Physics-based Sampling". *In Proceedings of IEEE International Conference on Robotics and Automation (ICRA 2007)*.
- [39] M. Ortega, S. Redon and S. Coquillart. "A Six Degree-of-Freedom God-Object Method for Haptic Display of Rigid Bodies". *In Proceedings of IEEE International Conference on Virtual Reality (IEEE VR 2006) – **Second Best Paper Award***.
- [40] S. Redon and M. C. Lin. "An Efficient, Error-Bounded Approximation Algorithm for Simulating Quasi-Statics of Complex Linkages". *In Proceedings of ACM Symposium on Solid and Physical Modeling, pp. 175 - 186 (SPM 2005)*.
- [41] S. Redon and M. C. Lin. "Practical Local Planning in the Contact Space". *In Proceedings of IEEE International Conference on Robotics and Automation (ICRA 2005)*.
- [42] S. Redon, Y. J. Kim, M. C. Lin and D. Manocha. "Fast Continuous Collision Detection for Articulated Models". *In Proceedings of ACM Symposium on Solid Modeling and Applications (SM 2004)*.
- [43] S. Redon, Y. J. Kim, M. C. Lin, D. Manocha and J. Templeman. "Interactive and Continuous Collision Detection for Avatars in Virtual Environments". *In Proceedings of IEEE International Conference on Virtual Reality (VR 2004)*.
- [44] N. Govindaraju, S. Redon, M. C. Lin and D. Manocha. "CULLIDE: Interactive Collision Detection between Complex Models in Large Environments using Graphics Hardware". *In ACM SIGGRAPH/Eurographics Graphics Hardware Proceedings, 2003*.

- [45] S. Redon, A. Kheddar and S. Coquillart. "Hierarchical Back-Face Culling for Collision Detection". *In Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2002)*.
- [46] S. Redon, A. Kheddar and S. Coquillart. "Gauss' least constraints principle and rigid body simulations". *In Proceedings of IEEE International Conference on Robotics and Automation (ICRA 2002)*.
- [47] S. Redon, A. Kheddar and S. Coquillart. "CONTACT: arbitrary in-between motions for continuous collision detection". *In Proceedings of IEEE ROMAN'2001, Sep. 2001*.
- [48] S. Redon, A. Kheddar and S. Coquillart. "An Algebraic Solution to the Problem of Collision Detection for Rigid Polyhedral Objects". *In Proceedings of IEEE International Conference on Robotics and Automation (ICRA 2000)*.

## Magazines

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- [49] S. Redon. "Conception d'objets à l'échelle atomique" ("Designing objects at the atomic scale"). *La Recherche (in French), January 2008*.

## Popularization

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- [50] S. Redon. "Le prototypage virtuel à l'échelle atomique" ("virtual prototyping at the atomic scale"). *Interstices (in French), 2007*.
- [51] S. Redon. "Le prototypage virtuel de nano-systèmes" ("virtual prototyping for nanosystems"). *TechnAgora (in French), 2008*.

## Theses

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- [52] S. Redon. "Algorithms for interactive dynamics simulation of rigid bodies". *PhD Dissertation (in French), 2002*.
- [53] S. Redon. "An Algebraic Solution to the Problem of Collision Detection for Rigid Polyhedral Objects". *Master's thesis (in French) - Paris VI, 1999*.

## Courses and Workshops

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- [54] S. Redon. "Adaptive Algorithms for Modeling and Simulating Nanosystems". *Lecturer in the Hands-on course on "Coarse Grain Methods for Biomolecular Simulations" at Institut Pasteur – Montevideo*.
- [55] S. Redon. "Modeling and Displaying Contact between Rigid Bodies". *Workshop on "Haptic Perception & Rendering" at ICRA 2007, with Antonio Bicchi (University of Pisa), Vincent Hayward (McGill University), Günter Niemeyer (Stanford University), Miguel A. Otaduy (ETH Zurich), Dinesh K. Pai (University of British Columbia / Rutgers University), Hong Z. Tan (Purdue University)*.

- [56] S. Redon. "Continuous Collision Detection for Rigid and Articulated Bodies". *Lecture notes for the course "Collision Handling and its Applications" at Eurographics 2006*, with Matthias Teschner (Freiburg University), Marie-Paule Cani (INP Grenoble), Pascal Volino (MIRALab, University of Geneva), Gabriel Zachmann (Clausthal University), Robert Bridson (University of British Columbia).
- [57] S. Redon. "Continuous Collision Detection for Rigid and Articulated Bodies". *Lecture notes for the course "Collision Detection and Proximity Queries" at SIGGRAPH 2004*, with Dave Eberle (PDI/DreamWorks), Sunil Hadap (PDI/DreamWorks), Christer Ericson (Sony Computer Entertainment America), Ming C. Lin (University of North Carolina at Chapel Hill), Pascal Volino (MIRALab, University of Geneva).

### Others (abstracts, national, bi-national, technical reports, etc.)

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- [58] S. Redon. "Fast Adaptive Computation of Neighboring Atoms". *NanoTech 2008, Boston, June 1-5 2008*.
- [59] M. Lee, Y. J. Kim, S. Redon. "Physically-based objects interaction in augmented reality environments". *Korean HCI conference (in Korean), Feb. 5-8, 2007*.
- [60] S. Kim, S. Redon, Y. J. Kim. "Continuous Collision Detection for Adaptive Simulations of Articulated Bodies". *In Proceedings of the 7th Korea-Israel Bi-National Conference on Geometric Modeling and Computer Graphics, 2007*.
- [61] S. Redon, N. Galoppo and M. C. Lin. "Adaptive Dynamics of Articulated Bodies: Implementation Details". *ACM SIGGRAPH Sketch, 2005*.
- [62] Y. J. Kim, S. Redon, M. C. Lin, D. Manocha. "Continuous Collision Detection for Articulated Models in Virtual Environments". *5th Japan/Korea Digital Engineering Workshop, Feb 24-25, 2005 (invited Paper)*.
- [63] S. Redon, N. Galoppo and M. C. Lin. "Adaptive Dynamics: Algorithms and Analysis". *UNC-CH Technical Report TR05-006*.
- [64] S. Redon and M. C. Lin. "A Fast Method for Local Penetration Depth Computation". *UNC-CH Technical Report TR05-003*.
- [65] S. Redon and M. C. Lin. "An Efficient, Error-Bounded Approximation Algorithm for Simulating Quasi-Statics of Complex Linkages". *UNC-CH Technical Report TR04-027*.
- [66] S. Redon, Y. J. Kim, M. C. Lin and D. Manocha. "Fast Continuous Collision Detection for Articulated Models". *UNC-CH Technical Report TR03-038*.
- [67] S. Redon, Y. J. Kim, M. C. Lin and D. Manocha. "Interactive and Continuous Collision Detection for Avatars in Virtual Environments". *UNC-CH Technical Report TR03-037*.
- [68] P. Fuchs, G. Moreau, J. Aubourg, S. Redon. "GANTOM Project final report: assisted scanning and texturing of museum objects". *Final report, Project PRIAMM (in French), 2002*.
- [69] S. Redon. "Digital watermarking of images". *State-of-the-art report for Ecole Polytechnique, Laboratoire d'Informatique de l'X (in French), 1998*.

## Invited talks and lectures

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- « Vers une intégration des nanosciences algorithmiques ? ». *Colloque Interfaces, Inria Bordeaux, July 7, 2016.*
- « SAMSON: A software platform for computational nanoscience ». *Maison de la simulation, Saclay, November 8, 2016.*
- « Towards integrating computational nanoscience ». *Midis MINATEC, Grenoble, January 15, 2016.*
- « SAMSON : Une plateforme logicielle pour les nanosciences ». *IMPMC, Paris, June 29, 2015.*
- « A software platform for computational nanoscience ». *TEDx, Grenoble, June 5, 2015, <https://www.youtube.com/watch?v=Atpigmv529E>.*
- « SAMSON: Software for Adaptive Modeling and Simulation Of Nanosystems ». *LMGP Seminar, Grenoble, December 2, 2013.*
- « Adaptive algorithms for computational nanoscience ». *Mathematics for Graphene 2013, Grenoble, October 10, 2013.*
- « Adaptive algorithms for modeling and simulating nanosystems ». *NANO S&T 2013, Xi'an, September 28, 2013.*
- « Mathématique et informatique pour l'infiniment petit ». *Remise des prix des Olympiades mathématiques, Grenoble, May 29, 2013.*
- « Adaptive algorithms for computational nanoscience ». *Fondation Nanosciences, Grenoble, December 5, 2012.*
- « Theory and algorithms for adaptive particle simulations ». *C4 Seminar, ETH Zürich, December 3, 2012.*
- « Theory and algorithms for adaptive particle simulations ». *Imagine the Future, INRIA Rennes, November 11, 2012.*
- « Le métier de chercheur ». *MathC2+. Grenoble, October 29, 2012.*
- « Adaptive Algorithms for Modeling and Simulating Nanosystems ». *M4 Seminar, Grenoble, January 27, 2012.*
- « Adaptive Algorithms for Modeling and Simulating Nanosystems ». *LIONS Laboratory, CEA, April 7, 2011.*
- « Adaptive Algorithms for Modeling and Simulating Nanosystems ». *RTRA Nanosciences, November 4, 2010.*
- « Manipuler l'infiniment petit ». *Lycée du Grésivaudan, March 18, 2010.*
- « Towards adaptive simulation of molecular systems ». *Rice University, February 25, 2010.*
- « Towards adaptive simulation of molecular systems ». *Mainz Materials Simulation Days 2009, Max Planck Institute for Polymer Research in Mainz, June 3-5 2009.*

- « Efficient modeling and simulation of flexibility using adaptive molecular quasi-statics ». *Workshop : "Flexibility in biological recognition: from biophysics to data models", INRIA Sophia-Antipolis, March 2009.*
- « Virtual prototyping for nanosystems ». *INRIA Rocquencourt, January 2009.*
- « NANO-D: Algorithms for Modeling and Simulation of Nanosystems ». *INRIA (Newcomers Seminar), December 2008.*
- « Physically-based animation: Continuous collision detection and multi-body dynamics ». *EWHA University, Seoul, Korea, April 2008.*
- « Adaptive Molecular Dynamics ». *First NIH-INRIA Workshop, NIH, Bethesda, USA, April 2007.*
- « Adaptive Molecular Dynamics ». *ReflexP Meeting, INRIA Sophia-Antipolis, France, January 2006.*
- « Adaptive Molecular Dynamics ». *Evasion, INRIA Rhone-Alpes, France, November 2006.*
- « Adaptive Molecular Dynamics ». *Geometrica, INRIA Sophia-Antipolis, France, October 2006.*
- « Fast and Robust Simulation of Rigid and Articulated Bodies: continuous collision detection and adaptive dynamics ». *ETH Zurich, Switzerland, May 2006.*
- « A Novel Algorithm for Six Degree-of-Freedom Haptic Display of Rigid Bodies ». *France-Asia Virtual Reality Workshop, the University of Tokyo, Japan, April 2006.*
- « Algorithms for dynamics simulation of rigid and articulated bodies ». *LIFL - Alcove, Lille, France, April 2006.*
- « Algorithms for dynamics simulation of rigid and articulated bodies: continuous collision detection and adaptive dynamics ». *INRIA, Grenoble, France, March 2006.*
- « Collision Checking and Motion Planning ». *INRIA, Grenoble, France, November 2005.*
- « Fast and Robust Simulation of Rigid and Articulated Bodies ». *Sungkyunkwan University, Seoul, Korea, November 2005.*
- « Adaptive algorithms for articulated-body quasi-statics and dynamics ». *Seoul National University, Seoul, Korea, November 2005.*
- « Continuous Collision Detection for Rigid and Articulated Bodies - Methods and Applications ». *EWHA University, Seoul, Korea, November 2005.*
- « Efficient algorithms for rigid and articulated-body dynamics ». *France Telecom, Grenoble, France, September 2005.*
- « Efficient algorithms for articulated-body dynamics ». *MOVI Seminars, INRIA, Grenoble, France, July 2005.*
- « Continuous collision detection ». *Second day of Action Spécifique CNRS «Collisions». Brest, France, June 2003.*
- « Algorithms for interactive dynamics simulation of rigid bodies ». *Laboratoire des Sciences de l'Image, de l'Informatique et de la Télédétection (LSIIT). Strasbourg, France, November 2002.*

## Patents

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- « **Method for simulating an assembly of elements** ». US Patent 20,150,254,378.
- « **Method for simulating a set of elements, and associated computer program** ». Patent pending.
- « **Computer device for simulating a set of objects in interaction and corresponding method** ». Patent n° FR0704414.
- « **Dynamics simulation of virtual objects** ». Patent n° FR0203253.