

# FRÉDÉRIC SUTER

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## EDUCATION

Ph.D. – Computer Science, École Normale Supérieure de Lyon, France (2002)

Dissertation: *Mixed parallelism and performance prediction on heterogeneous networks of parallel machines*

Advisor: Prof. Frédéric Desprez

M.S. – Diplôme d'Études Approfondies (DEA) in Combinatorics, Parallelism and Randomization, Université de Picardie Jules Verne, Amiens, France (1999)

Dissertation: *Large Data Handling Environments*

Advisor: Prof. Dominique Lazure

## RESEARCH INTERESTS

Research areas of interest include parallel computing, Grid computing, scheduling and simulation.

## PROFESSIONAL EXPERIENCE

10/08 - present : Junior Researcher (CR1), CNRS, IN2P3 Computing Center

12/04 - 09/08 : Assistant Professor, Computer Science Department, Université Henri Poincaré, Nancy 1)

09/04 - 10/04 : Postdoctoral Research Associate, GRAAL Project Team, École Normale Supérieure de Lyon, ARC INRIA RedGrid

09/03 - 08/04 : Visiting Assistant Professor, Université Joseph Fourier, Grenoble 1

11/02 - 08/03 : Postdoctoral Research Associate, GRAIL laboratory, University of California, San Diego

09/02 - 11/02 : Engineer, École Normale Supérieure de Lyon, RNTL GASP

## Publications

### Journal Articles

- [1] Henri Casanova, Frédéric Desprez, and Frédéric Suter. On Cluster Resource Allocation for Multiple Parallel Task Graphs. *Journal of Parallel and Distributed Computing*, 70(12):1193–1203, December 2010.
- [2] Pierre-François Dutot, Tchimou N'takpé, Frédéric Suter, and Henri Casanova. Scheduling Parallel Task Graphs on (Almost) Homogeneous Multi-cluster Platforms. *IEEE Transactions on Parallel and Distributed Systems*, 20(7):940–952, July 2009.

- [3] Frédéric Desprez and Frédéric Suter. Impact of Mixed-Parallelism on Parallel Implementations of Strassen and Winograd Matrix Multiplication Algorithms. *Concurrency and Computation: Practice and Experience*, 16(8):771–797, July 2004.
- [4] Eddy Caron, Frédéric Desprez, Martin Quinson, and Frédéric Suter. Performance Evaluation of Linear Algebra Routines. *International Journal of High Performance Computing Applications*, 18(3):373–390, 2004. Special issue on Clusters and Computational Grids for Scientific Computing (CCGSC’02).
- [5] Eddy Caron, Frédéric Desprez, and Frédéric Suter. Parallel Extension of a Dynamic Performance Forecasting Tool. *Scalable Computing: Practice and Experience*, 6(1):57–69, March 2003. Special issue on selected papers of ISPDC’02.
- [6] Eddy Caron, Serge Chaumette, Sylvain Contassot-Vivier, Frédéric Desprez, Eric Fleury, Claude Gomez, Maurice Goursat, Emmanuel Jeannot, Dominique Lazure, Frédéric Lombard, Jean-Marc Nicod, Laurent Philippe, Martin Quinson, Pierre Ramet, Jean Roman, Franck Rubi, Serge Steer, Frédéric Suter, and Gil Utard. Scilab to Scilab//, the OURAGAN Project. *Parallel Computing*, 27(11):1497–1519, October 2001.

### **Refereed International Conference and Workshop Proceedings**

- [7] Sascha Hunold, Henri Casanova, and Frédéric Suter. From Simulation to Experiment: A Case Study on Multiprocessor Task Scheduling. In *Proceedings of the 13th Workshop on Advances in Parallel and Distributed Computational Models (APDCM)*, Anchorage, AK, May 2011.
- [8] Pierre-Nicolas Clauss, Mark Stillwell, Stéphane Genaud, Frédéric Suter, Henri Casanova, and Martin Quinson. Single Node On-Line Simulation of MPI Applications with SMPI. In *Proceedings of the 25th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Anchorage, AK, May 2011.
- [9] Martin Quinson, Laurent Bobelin, and Frédéric Suter. Synthesizing Generic Experimental Environments for Simulation. In *Proceedings of the 5th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC)*, pages 222–229, Fukuoka, Japan, November 2010.
- [10] Sascha Hunold, Ralf Hoffmann, and Frédéric Suter. Jedule: A Tool for Visualizing Schedules of Parallel Applications. In *Proceedings of the 1st International Workshop on Parallel Software Tools and Tool Infrastructures (PSTI)*, pages 169–178, San Diego, CA, September 2010.
- [11] Henri Casanova, Frédéric Desprez, and Frédéric Suter. Minimizing Stretch and Makespan of Multiple Parallel Task Graphs via Malleable Allocations. In *Proceedings of the 39th International Conference on Parallel Processing (ICPP)*, pages 71–80, San Diego, CA, September 2010.
- [12] Frédéric Desprez and Frédéric Suter. A Bi-Criteria Algorithm for Scheduling Parallel Task Graphs on Clusters. In *Proceedings of the 10th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, pages 243–252, Melbourne, Australia, May 2010.
- [13] Tchिमou N’Takpé and Frédéric Suter. Concurrent Scheduling of Parallel Task Graphs on Multi-Clusters Using Constrained Resource Allocations. In *Proceedings of the 10th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC)*, Rome, Italy, May 2009.
- [14] Sascha Hunold, Thomas Rauber, and Frédéric Suter. Redistribution Aware Two-Step Scheduling for Mixed-Parallel Applications. In *Proceedings of the IEEE International Conference on Cluster Computing (Cluster)*, pages 50–58, Tsukuba, Japan, September 2008.

- [15] Sascha Hunold, Thomas Rauber, and Frédéric Suter. Scheduling Dynamic Workflows onto Clusters of Clusters using Postponing. In *Proceedings of the 3rd International Workshop on Workflow Systems in e-Science (WSES)*, pages 669–674, Lyon, France, May 2008.
- [16] Pierre-Nicolas Clauss, Jens Gustedt, and Frédéric Suter. Out-of-Core Wavefront Computations with Reduced Synchronization. In Julien Bourgeois, Francois Spies, and Didier El Baz, editors, *Proceedings of the 16th Euromicro International Conference on Parallel, Distributed and network-based Processing (PDP)*, pages 293–300, Toulouse, France, February 2008. IEEE.
- [17] Tchimou N’takpé and Frédéric Suter. Self-Constrained Resource Allocation for Parallel Task Graph Scheduling on Shared Computing Grids. In *Proceedings of the 19th IASTED International Conference on Parallel and Distributed Computing and Systems (PDCS)*, pages 36–41, Cambridge, MA, November 2007.
- [18] Frédéric Suter. Scheduling  $\Delta$ -Critical Tasks in Mixed-Parallel Applications on a National Grid. In *Proceedings of the 8th IEEE/ACM International Conference on Grid Computing (Grid)*, pages 2–9, Austin, TX, September 2007.
- [19] Tchimou N’takpé, Frédéric Suter, and Henri Casanova. A Comparison of Scheduling Approaches for Mixed-Parallel Applications on Heterogeneous Platforms. In *Proceedings of the 6th International Symposium on Parallel and Distributed Computing (ISPDC)*, Hagenberg, Austria, July 2007. IEEE Computer Press.
- [20] Tchimou N’Takpé and Frédéric Suter. Critical path and area based scheduling of parallel task graphs on heterogeneous platforms. In *Proceedings of the 12th International Conference on Parallel and Distributed Systems (ICPADS)*, pages 3–10, Minneapolis, MN, July 2006.
- [21] Eddy Caron, Frédéric Desprez, and Frédéric Suter. Out-of-Core and Pipeline Techniques for Wavefront Algorithms. In *Proceedings of the 19th International Parallel and Distributed Processing Symposium (IPDPS)*, Denver, CO, April 2005.
- [22] Henri Casanova, Frédéric Desprez, and Frédéric Suter. From Heterogeneous Task Scheduling to Heterogeneous Mixed Parallel Scheduling. In Marco Danelutto, Domenico Laforenza, and Marco Vanneschi, editors, *Proceedings of the 10th International Euro-Par Conference (Euro-Par)*, volume 3149 of *Lecture Notes in Computer Science*, pages 230–237, Pisa, Italy, August/September 2004. Springer.
- [23] Vincent Boudet, Frédéric Desprez, and Frédéric Suter. One-Step Algorithm for Mixed Data and Task Parallel Scheduling Without Data Replication. In *Proceedings of the 17th International Parallel and Distributed Processing Symposium (IPDPS’03)*, Nice, France, April 2003.
- [24] Philippe Combes, Frédéric Lombard, Martin Quinson, and Frédéric Suter. A Scalable Approach to Network Enabled Servers. In A. Jean-Marie, editor, *Advances in Computing Science - ASIAN 2002. Internet Computing and Modeling, Grid Computing, Peer-to-Peer Computing, and Cluster Computing. Seventh Asian Computing Science Conference*, volume 2550 of *Lecture Notes in Computer Science*, pages 110–124, Hanoi, Vietnam, December 2002. Springer-Verlag.
- [25] Eddy Caron, Frédéric Desprez, Frédéric Lombard, Jean-Marc Nicod, Martin Quinson, and Frédéric Suter. A Scalable Approach to Network Enabled Servers. In B. Monien and R. Feldmann, editors, *Proceedings of the 8th International EuroPar Conference (Research Note)*, volume 2400 of *Lecture Notes in Computer Science*, pages 907–910, Paderborn, Germany, August 2002. Springer-Verlag.

- [26] Eddy Caron and Frédéric Suter. Parallel Extension of a Dynamic Performance Forecasting Tool. In *Proceedings of the International Symposium on Parallel and Distributed Computing (ISPDC'02)*, pages 80–93, Iasi, Romania, July 2002.
- [27] Frédéric Desprez, Martin Quinson, and Frédéric Suter. Dynamic Performance Forecasting for Network-Enabled Servers in a Heterogeneous Environment. In H.R. Arabnia, editor, *Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA)*, volume III, pages 1421–1427, Las Vegas, June 2001. CSREA Press.
- [28] Frédéric Desprez and Frédéric Suter. Mixed Parallel Implementations of the Top Level of Strassen and Winograd Matrix Multiplication Algorithms. In *Proceedings of the 15th International Parallel and Distributed Processing Symposium (IPDPS'01)*, San Francisco, April 2001.

### **Book Chapters**

- [29] Eddy Caron, Frédéric Desprez, Eric Fleury, Frédéric Lombard, Jean-Marc Nicod, Martin Quinson, and Frédéric Suter. *Calcul réparti à grande échelle*, chapter Une approche hiérarchique des serveurs de calculs. Hermès Science Paris, 2002. ISBN 2-7462-0472-X.

### **Refereed National Conference Proceedings**

- [30] Vincent Boudet and Frédéric Suter. Algorithme d’ordonnancement mixte à étape unique sans réplication de données. In *Quinzièmes Rencontres Francophones du Parallélisme*, La Colle sur Loup, October 2003.
- [31] Eddy Caron and Frédéric Suter. Extension parallèle d’un outil de prédiction dynamique de performances. In *Quatorzièmes Rencontres Francophones du Parallélisme*, pages 69–74, Hammamet, Tunisie, April 2002.
- [32] Frédéric Desprez and Frédéric Suter. Produit de matrices, Strassen et parallélisme mixte. In *Treizièmes Rencontres Francophones du Parallélisme des Architectures et des Systèmes*, pages 25–30, Paris, La Villette, April 2001.
- [33] Frédéric Lombard, Martin Quinson, and Frédéric Suter. Une approche extensible des serveurs de calcul. In *Treizièmes Rencontres Francophones du Parallélisme des Architectures et des Systèmes*, pages 79–84, Paris, La Villette, April 2001.
- [34] Frédéric Suter, Eddy Caron, and Dominique Lazure. Manipulation de données de grande taille dans scilab//. In *Douzièmes Rencontres Francophones du Parallélisme*, Besançon, June 2000.

### **Technical Reports**

- [35] Frédéric Suter and Henri Casanova. Extracting Synthetic Multi-Cluster Platform Configurations from Grid’5000 for Driving Simulation Experiments. Technical Report RT-0341, Institut National de Recherche en Informatique et en Automatique (INRIA), August 2007.
- [36] Marc-Eduard Frincu, Martin Quinson, and Frédéric Suter. Handling Very Large Platforms with the New SimGrid Platform Description Formalism. Technical Report RT-0348, Institut National de Recherche en Informatique et en Automatique (INRIA), February 2008.
- [37] George S. Markomanolis and Frédéric Suter. Time-Independent Trace Acquisition Framework – A Grid’5000 How-to. Technical Report RR-7602, Institut National de Recherche en Informatique et en Automatique (INRIA), April 2011.

## INVITED PRESENTATIONS

- On Cluster Resource Allocation for Multiple Parallel Task Graphs, Third Scheduling Workshop, Aussois, France, June 2010.

## FUNDING AWARDS

- 257,221 euros / 4 year (Co-PI), ANR INFRA Program 12/11 - 12/15  
*SONGS, Simulation of Next Generation Systems*
- 21,000 euros / 3 years (PI), CNRS PICS Program, 01/09-12/12  
*DimSim, Dimensioning through Simulation*
- 5,000 euros / 1 year (PI), Interface IdG/ALADDIN Program, 06/10 - 06/11  
*SimGlite, when SimGrid meets gLite*
- 5,000 euros / 1 year (Co-PI), Interface IdG/ALADDIN Program, 06/10 - 06/11  
*SimData, simulation of data storage in SimGrid*
- 76,500 euros / 3 years (Co-PI), ANR ARPEGE Program, 01/09-10/12  
*USS SimGrid: Ultra Scalable Simulation with SimGrid*
- 78,000 euros / 3 years (Co-PI), ANR ARPEGE Program, 01/09-10/12  
*SPADES, Servicing Petascale Architectures and DistributEd Systems*
- 4,000 euros / 1 year (PI), INRIA Explorer Program  
*Establishing a formal collaboration with University of Hawai'i at Manoa*
- 38,000 euros / 2 years (PI), INRIA ARC Program, 01/05 - 12/06  
*Parallel Tasks Scheduling on Heterogeneous Environments*

## GRADUATE STUDENT ADVISING

### Ph.D. Student Advising

Sylvain Gault, Ph.D., expected November 2013 (co-adviser)  
George Markomanolis, Ph.D., expected November 2012 (co-adviser)  
Tchimou N'Takpé, Ph.D., obtained January 2009 (adviser)

### M.S. Student Advising

George Markomanolis, M.S. obtained 2009 (adviser)  
Marc-Eduard Frincu, M.S. obtained 2007 (co-adviser)  
Kamel Khelfaoui, M.S., obtained 2007 (adviser)  
Pierre-Nicolas Clauss, M.S., obtained 2006 (adviser)  
Tchimou N'Takpé, M.S., obtained 2005 (adviser)  
Olivier Riffault, M.S., obtained 2002 (adviser)  
Martin Quinson, M.S., obtained 2000 (co-adviser)

## **PROFESSIONAL SERVICES**

### **Conference Chairing**

- 2011
  - **Local Chair:** Europar'11
  - **Local Chair:** Grid'11

### **Conference program committee**

- 2012
  - VECPAR'12
- 2011
  - CCGRID'11
  - CLOSER'11
  - VDTC'11
  - MapReduce'11
- 2010
  - VTDC'10
  - MapReduce'10
  - LasCog-Scodis'10
  - HPeCC'10
- 2009
  - ParCo'09
  - Challenges of Large Applications in Distributed Environments (CLADE)
- 2008
  - 17th Heterogeneity in Computing Workshop (HCW'08)
- 2007
  - 16th Heterogeneity in Computing Workshop (HCW'07)