EMMANUEL HEBRARD

CONTACT

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CURRENT AND PAST POSITIONS

2010–Present   **Researcher, LAAS-CNRS — Toulouse**

LAAS-CNRS

Researcher in the French National Center for Scientific Research (CNRS), hosted at LAAS, Toulouse in the group ROC.
Reference: Christian ARTIGUES · +33 561 337907 · artigues@laas.fr

2007–2010   **Postdoc, 4C — Cork**

4C

Embark fellowship at Cork Constraint Computation Centre (4C).
Reference: Barry O'SULLIVAN +353 21 420 5951 · b.osullivan@cs.ucc.ie

EDUCATION

2003–2007   **University of New South Wales**

UCC & UNSW

Ph.D. Student at University College Cork (2003–2004) and University of New South Wales (2005–2007) under the supervision of Toby Walsh.
Reference: Toby WALSH +61 2 8306 0450 · toby.walsh@nicta.com.au

2003–2007   **Université Montpellier II**

UM2

Master degree at University of Montpellier (1998–2002) under the supervision of Christian bessiere.
Reference: Christian BESSIERE +33 434 004220 · bessiere@lirmm.fr

MAIN ACHIEVEMENTS

Grants

2010 · Research project on "Conflict Directed Scheduling". € 70k (Collaborator) from Google, and a Ph.D. scholarship from CNRS and the "Midi-Pyrénées région".

2007 · Embark Fellowship (PI). Research project on "A Taxonomy of Global Constraints". € 96k over two years from IRCSET (Irish Research Council for Science, Engineering and Technology).

Awards

2012 · Research article, *Scheduling Scientific Experiments on the Rosetta/Philae Mission* awarded "best application paper" at CP.

2012 · Research article, *An Optimal Arc Consistency Algorithm for a Chain of Atmost Constraints with Cardinality* gets an "honorary mention" at CP.

Competitions

2009 · International CSP Solver Competition. *Mistral*, first in eight out of twenty one categories, and first overall

2008 · International CSP Solver Competition. *Mistral*, second overall and *cpHydra*, first in four out of five categories, and first overall

2008 · International Timetabling Competition. First place in the second Track: 'Post Enrolment based Course Timetabling'

Softwares

2010 · **Numberjack**: A Python API for Combinatorial Optimisation.

2008 · **cpHydra**: An Algorithm Portfolio for Constraint Solving.

2004 · **Mistral**: A Constraint Satisfaction and Optimisation Library.

SUPERVISION ACTIVITIES

Ph.D.   Jan. 2012–Jun. 2015 · Supervise the Ph.D. Thesis of Mohamed Siala: Propagation and Explanation of Scheduling and Sequencing Constraints. "Honourable Mention" EurAI Distinguished Dissertation Award 2015 (Google/CNRS/Midi-Pyrénées scholarship)

Jan. 2013–Present · Supervise the Ph.D. Thesis of Ludivine Boche-Sauvan: Validation of Test Plans for Telecommunication Satellites Payloads. (Industrial scholarship – Astrium)

Oct. 2013–Dec. 2016 · Supervise the Ph.D. Thesis of Clément Carbonnel: Harnessing tractability in constraint satisfaction problems. (State scholarship)

Postdoc   2012-2013 · Supervise the post-doctoral fellowship of Gilles Simonin: Scheduling of Scientific Experiments for the Space Probe Rosetta/Philae. (Collaboration with CNES)

OTHER RESEARCH ACTIVITIES

Projects   2016 · Collaboration with Intel for the automatic tuning of audio rendering algorithms. (€ 10k, PI)

2012-2013 · Collaboration with CNES for scheduling the scientific experiences to be performed by the ESA space probe Rosetta/Philae on the comet 67P/Churyumov-Gerasimenko. (€ 150k, Collaborator)

2013-Present · Collaboration with Astrium on the problem of sequencing validation tests of the payload of telecommunication satellites. (Ph.D. scholarship plus € 36k)

2013 · Collaboration with CNES, Astrium and ONERA for developing flexible solutions methods to the download of acquisition made by observation satellites. (€ 40k, Collaborator)

Talks   2015 · Invited to present LAAS's contribution to scheduling Philae's activities on the comet Churyumov-Gerasimenko *Des Plans sur la Comète* at IBM Toulouse, INRA Toulouse and Edinburgh University Business School.

2014 · Invited to give a tutorial *The Thousand Faces of Constraint Propagation* at ROADEF.

2011 · Invited to give a master class *Scheduling with SAT* at CPAIOR.

2010 · Invited to give a tutorial *Constraint Programming and Combinatorial Optimisation in Numberjack* at AAAI.

Editing   2016 · Program Chair of JFPC 2016.

2006 · Editor of the Special Issue of AI Communications on Constraint Programming for Planning and Scheduling.

Senior Program Committee member of IJCAI-15, IJCAI-16.

Program Committee member of AI 2007, AAAI 2008, AAAI 2012, AAAI 2013, AAAI 2015, AAAI 2017, ECAI 2012, ECAI 2014, IJCAI-09, CP 2010, CP 2011, CP 2012, CP 2013, CP 2014, CP 2015, CPAIOR 2014, JFPC 2010, JFPC 2012, JFPC 2013.

Organisation   Organising Committee member of CP 2016.

Organising Committee member of JFPC 2012.

Program and Organising Chair of the first International Workshop on Search Strategies and Non-standard Objectives (held during CPAIOR 2012).

Reviewing   Refereeing for several journals (JAIR, AIJ, IJOC, Constraints) and conferences.

Citations   2003 to date: 1186 · h-index of 20 · i10-index of 28, (source Google Scholar).

2009 to date: 723 · h-index of 15 · i10-index of 20, (source Google Scholar).

PUBLICATIONS IN JOURNALS

2016　**Discrete Applied Mathematics** (ERA rank: A) · *Approximation of the Parallel Machine Scheduling Problem with Additional Unit Resources*. Emmanuel Hebrard, Marie-Jos Huguet, Nicolas Jozefowiez, Adrien Maillard, Cdric Pralet and Grard Verfaillie.

　　Constraints (ERA rank: A) · *Constraint Programming for Planning Test Campaigns of Communications Satellites*. Emmanuel Hebrard, Marie-Jos Huguet, Daniel Veysseire, Ludivine Boche Sauvan and Bertrand Cabon.

2015　**Constraints** (ERA rank: A) · *Scheduling Scientific Experiments for Comet Exploration*. Gilles Simonin, Christian Artigues, Emmanuel Hebrard and Pierre Lopez.

　　Informs Journal on Computing (ERA rank: A) · *Solving Variants of the Job Shop Scheduling Problem through Conflict-Directed Search*. Diarmuid Grimes and Emmanuel Hebrard.

　　Engineering Applications of Artificial Intelligence (ERA rank: B) · *A Study of Constraint Programming Heuristics for the Car-Sequencing Problem*. Mohamed Siala, Emmanuel Hebrard, and Marie-Josée Huguet.

2014　**Constraints** (ERA rank: A) · *An Optimal Arc Consistency Algorithm for a Particular Case of Sequence Constraint*. Mohamed Siala, Emmanuel Hebrard, and Marie-Josée Huguet.

2011　**Journal of Artificial Intelligence Research** (ERA rank: A) · *Soft Constraints of Difference and Equality*. Emmanuel Hebrard, Daniel Marx, Barry O'Sullivan and Igor Razgon.

2010　**Annals of Operations Research** (ERA rank: B) · *Local Search and Constraint Programming for the Post Enrolment-based Course Timetabling Problem*. Hadrien Cambazard, Emmanuel Hebrard, Barry O'Sullivan and Alexandre Papadopoulos.

2009　**Artificial Intelligence Journal** (ERA rank: A*) · *The Complexity of Reasoning with Global Constraints*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich and Toby Walsh.

2006　**Constraints** (ERA rank: A) · *Filtering Algorithms for the NValue Constraint*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Zeynep Kiziltan and Toby Walsh.

PUBLICATIONS IN INTERNATIONAL CONFERENCES

2016　**IJCAI** (CORE rank: A*) · *Ranking Constraints*. Christian Bessiere, Emmanuel Hebrard, George Katsirelos, Zeynep Kiziltan and Toby Walsh.

　　CP (CORE rank: A) · *Propagation via Kernelization: the Vertex Cover Constraint*. Clment Carbonnel and Emmanuel Hebrard.

2015　**CP** (CORE rank: A) · *Two Clause Learning Approaches for Disjunctive Scheduling*. Mohamed Siala, Christian Artigues and Emmanuel Hebrard.

　　IJCAI (CORE rank: A*) · *Reasoning about Connectivity Constraints*. Christian Bessiere, Emmanuel Hebrard, George Katsirelos and Toby Walsh.

2014　**CP** (CORE rank: A) · *On Backdoors To Tractable Constraint Languages*. Clement Carbonnel, Emmanuel Hebrard and Martin Cooper.

　　CP (CORE rank: A) · *The Balance Constraint Family*. Christian Bessiere, Emmanuel Hebrard, George Katsirelos, Zeynep Kiziltan, Emilie Picard-Cantin, Claude-Guy Quimper and Toby Walsh.

　　CPAIOR (CORE rank: B) · *Buffered Resource Constraint: Algorithms and Complexity*. Christian Bessiere, Emmanuel Hebrard, Marc-Andre Menard, Claude-Guy Quimper and Toby Walsh.

　　CPAIOR (CORE rank: B) · *SAT and Hybrid models of the Car-Sequencing problem*. Christian Artigues, Emmanuel Hebrard, Valentin Mayer-Eichberger, Mohamed Siala and Toby Walsh.

ICAPS (CORE rank: A*) · *Satellite Data Download Management with Uncertainty about the Generated Volumes*. Cedric Pralet, Gerard Verfaillie, Adrien Maillard, Emmanuel Hebrard, Nicolas Jozefowiez, Marie-Josee Huguet, Thierry Desmousceaux, Pierre Blanc-Paques and Jean Jaubert.

2013   **IJCAI** (CORE rank: A*) · *Detecting and Exploiting Subproblem Tractability*. Christian Bessiere, Clement Carbonnel, Emmanuel Hebrard, George Katsirelos and Toby Walsh.

IJCAI (CORE rank: A*) · *Constraint Acquisition via Partial Queries*. Christian Bessiere, Remi Coletta, Emmanuel Hebrard, George Katsirelos, Nadjib Lazaar, Nina Narodytska, Claude-Guy Quimper and Toby Walsh.

2012   **CP** (CORE rank: A) · *An Optimal Arc Consistency Algorithm for a Chain of Atmost Constraints with Cardinality*. Mohamed Siala, Emmanuel Hebrard and Marie-Jose Huguet.

CP (CORE rank: A) · *Scheduling Scientific Experiments on the Rosetta/Philae Mission*. Gilles Simonin, Christian Artigues, Emmanuel Hebrard and Pierre Lopez.

CPAIOR (CORE rank: B) · *Complete Characterization of Near-Optimal Sequences for the Two-Machine Flow Shop Scheduling Problem*. Jean-Charles Billaut, Emmanuel Hebrard and Pierre Lopez.

2011   **CP** (CORE rank: A) · *Models and Strategies for Variants of the Job Shop Scheduling Problem*. Diarmuid Grimes and Emmanuel Hebrard.

2010   **CPAIOR** (CORE rank: B) · *Jobshop Scheduling with Setup Times and Maximal Time-lags: Simple Constraint Programming Approach*. Diarmuid Grimes and Emmanuel Hebrard.

CPAIOR (CORE rank: B) · *Constraint Programming and Combinatorial Optimisation in numberjack*. Emmanuel Hebrard, Eoin O'Mahony and Barry O'Sullivan.

2009   **CP** (CORE rank: A) · *Constraints of Difference and Equality: A Complete Taxonomic Characterisation*. Emmanuel Hebrard, Dániel Marx, Barry O'Sullivan and Igor Razgon.

CP (CORE rank: A) · *Minimising Decision Tree Size as Combinatorial Optimisation*. Christian Bessiere, Emmanuel Hebrard and Barry O'Sullivan.

CP (CORE rank: A) · *Closing the Open Shop: Contradicting Conventional Wisdom*. Diarmuid Grimes, Emmanuel Hebrard and Arnaud Malapert.

2008   **CP** (CORE rank: A) · *A Soft Constraint of Equality: Complexity and Approximability*. Emmanuel Hebrard, Barry O'Sullivan and Igor Razgon.

ECAI (CORE rank: A) · *Slide: A Useful Special Case of the Cardpath Constraint*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Zeynep Kiziltan and Toby Walsh.

AAAI (CORE rank: A*) · *The Parameterized Complexity of Global Constraints*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Zeynep Kiziltan, Claude-Guy Quimper and Toby Walsh.

2007   **IJCAI** (CORE rank: A*) · *Distance Constraints in Constraint Satisfaction*. Emmanuel Hebrard, Brahim Hnich, Barry O'Sullivan and Toby Walsh.

2006   **CP** (CORE rank: A) · *The Roots Constraints*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Zeynep Kiziltan and Toby Walsh.

CPAIOR (CORE rank: B) · *The RANGE Constraint: Algorithms and implementation*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Zeynep Kiziltan and Toby Walsh.

2005   **AAAI** (CORE rank: A*) · *Finding Diverse and Similar Solutions in Constraint Programming*. Emmanuel Hebrard, Brahim Hnich, Barry O'Sullivan and Toby Walsh.

IJCAI (CORE rank: A*) · *The Range and Roots Constraints: Specifying Counting and Occurrence Constraints*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Zeynep Kiziltan and Toby Walsh.

CPAIOR (CORE rank: B) · *Filtering Algorithms for the NValue Constraint.* Christian Bessiere, Emmanuel Hebrard, Brahim Hnich, Zeynep Kiziltan and Toby Walsh.

2004   **CP** (CORE rank: A) · *Disjoint, Partition and Intersection Constraints for Set and Multiset Variables*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich and Toby Walsh.

CP (CORE rank: A) · *Tractability of Global Constraints*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich and Toby Walsh.

ECAI (CORE rank: A) · *Robust Solutions for Constraint Satisfaction and Optimization*. Emmanuel Hebrard, Brahim Hnich and Toby Walsh.

AAAI (CORE rank: A*) · *The Complexity of Global Constraints*. Christian Bessiere, Emmanuel Hebrard, Brahim Hnich and Toby Walsh.

CPAIOR (CORE rank: B) · *Super Solutions in Constraint Programming*. Emmanuel Hebrard, Brahim Hnich and Toby Walsh.

2003   **SAT** (CORE rank: A) · *Local Consistencies in SAT*. Christian Bessiere, Emmanuel Hebrard and Toby Walsh.