Cédric Josz
Laboratory for Analysis and Architecture of Systems (LAAS)
Postdoctoral European Research Council Fellow

General

Born April 11th 1989
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Contact

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Education

2013–2016 University of Paris VI (*Ecole Doctorale* 386), France
Ph.D. in applied mathematics, defended on July 13th 2016
Thesis advisor: Jean Charles Gilbert
Industrial advisors: Jean Maeght, Patrick Panciatici
Title: "Application of Polynomial Optimization to Electricity Transmission Networks"
[link]

2011–2012 University of Paris I, France
Master's degree in mathematical modeling
and methods for economics and finance

2009–2012 ENSTA ParisTech, University of Paris-Saclay, France
Master's degree in engineering
Optimization, control, and operations research

2007–2009 *Lycée Privé Sainte-Geneviève*, Versailles, France
Preparation for competitive entry exam to French engineering schools
Mathematics, physics, and industrial sciences

Teaching

2014–2016 Numerical optimization: theory and algorithms (52 hours)
1st year master students in engineering
ENSTA ParisTech, University of Paris-Saclay

2014 Nonsmooth convex optimization (6 hours)
2nd year master students in engineering
ENSTA ParisTech, University of Paris-Saclay

2013–2014 Hilbert spaces (48 hours)
3rd year undergraduates in mathematics
University of Paris I

2012 SCILAB programming (32 hours)
2rd year undergraduates in mathematics
University of Paris I

Experience

2016-present	Postdoctoral fellow at LAAS CNRS (French National Scientific Research Center) Advisor: Jean Bernard Lasserre Polynomial optimization and its applications
2013–2016	Employment in the R&D of the French transmission system operator RTE
2012	Internship in the R&D of RTE (6 months) Advisors: Stéphane Fliscounakis, Jean Maeght Application of semidefinite programming to the optimal power flow problem
2011	Internship at *École Polytechnique Montréal*, Canada (3 months) Advisors: Michel Gendreau, Grégory Émiel, Pierre-Luc Carpentier Convex approximation of power generation for medium-term hydro dispatch scheduling
2010	Intership at GDF Suez, Brussels, Belgium (1 month) Comparison of marketing to households between Belgian and American energy providers

Grants

2016–2017	Postdoctoral fellow, European Research Council Advanced Grant Project TAMING (reference: 666981) at LAAS CNRS
2013–2016	French ministry of higher education CIFRE ANRT contract 2013/0179 with French transmission system operator RTE and French Institute for Research in Computer Science and Automation INRIA.

Submitted manuscripts

1. C. Josz, *Counterexample to Global Convergence of DSOS and SDSOS hierarchies*, July 2017. [preprint]
2. C. Josz, *On the Relationship Between Real and Complex Linear Systems*, May 2017. [preprint]
3. C. Josz, *Algorithm for Optimization and Interpolation based on Hyponormality*, March 2017. [preprint]
4. J. C. Gilbert, C. Josz, *Plea for a Semidefinite Optimization Solver in Complex Numbers*, March 2017. [preprint]
5. C. Josz, D. K. Molzahn, *Moment/Sum-of-Squares Hierarchy for Complex Polynomial Optimization*, August 2015. [preprint]

Accepted publications

1. D. K. Molzahn, C. Josz, I. A. Hiskens, *Moment Relaxations of Optimal Power Flow Problems: Beyond the Convex Hull*, IEEE, Global Conference on Signal and Information Processing, Washington D.C., December 2016. [preprint]
2. D. K. Molzahn, C. Josz, I. A. Hiskens, P. Panciatici, *Computational Analysis of Sparsity-Exploiting Moment Relaxations of the OPF Problem*, 19^{th} Power Systems Computation Conference, Genoa, June 2016. [doi] [preprint]

3. D. K. Molzahn, C. Josz, I. A. Hiskens, P. Panciatici, *A Laplacian-Based Approach for Finding Near Globally Optimal Solutions to OPF Problems*, IEEE, Transactions on Power Systems, April 2016. [doi] [preprint]

4. D. K. Molzahn, C. Josz, I. A. Hiskens, P. Panciatici, *Solution of Optimal Power Flow Problems Using Moment Relaxations Augmented with Objective Function Penalization*, 54th Conference on Decision and Control, Osaka, December 2015. [doi] [preprint]

5. C. Josz, D. Henrion, *Strong Duality in Lasserre's Hierarchy for Polynomial Optimization*, Springer, Optimization Letters, February 2015. [doi] [preprint]

6. C. Josz, J. Maeght, P. Panciatici, and J. C. Gilbert, *Application of the Moment-SOS Approach to Global Optimization of the OPF Problem*, IEEE, Transactions on Power Systems, vol. 30, no. 1, pp. 463–470, May 2014. [doi] [preprint]

Published data

1. C. Josz, S. Fliscounakis, J. Maeght, and P. Panciatici, *AC Power Flow Data in MATPOWER and QCQP Format: iTesla, RTE Snapshots, and PEGASE*, MATPOWER 6.0b1, March 2016. [link]

2. C. Josz, S. Fliscounakis, J. Maeght, and P. Panciatici, *Power Flow Data for European High-Voltage Transmission Network: 89, 1354, 2869, and 9241-bus PEGASE Systems*, MATPOWER 5.1, March 2015. [link]

Presentations

UCSD, department of mathematics, April 5$^{\text{th}}$ 2017, *Polynomial Optimization, Interpolation, and its Applications.*

UCLA, department of electrical engineering, March 30$^{\text{th}}$ 2017, *Complex Polynomial Optimization and its Application to Power Systems.*

USC, department of electrical engineering, March 29$^{\text{th}}$ 2017, *Algorithm for Optimization and Interpolation based on Hyponormality.*

Los Alamos National Laboratory, March 28$^{\text{th}}$ 2017, *Application of Polynomial Optimization to Electricity Transmission Networks.*

Caltech, Smart Grid seminar, March 27$^{\text{th}}$ 2017, *Polynomial Optimization, Interpolation, and its Application to Power Systems.*

Argonne National Laboratory, Mathematics and Computer Science Division, March 22$^{\text{nd}}$ 2017, *Algorithm for Optimization and Interpolation based on Hyponormality.*

Banff International Research Station, workshop titled "Optimization and Inference for Physical Flows on Networks", March 6$^{\text{th}}$ 2017, *Application of Complex Polynomial Optimization to Optimal Power Flow.*

MOSEK, Copenhagen, workshop titled "Semidefinite Optimization in Power Flow Problems", February 28$^{\text{th}}$ 2017, *Application of Polynomial Optimization to Electricity Transmission Networks.*

Multidisciplinary Optimization Seminar in Toulouse, November 7$^{\text{th}}$ 2016, *Polynomial Optimization and Semidefinite Programming in Complex Numbers.*

ICCOPT 2016, Tokyo, August 11$^{\text{th}}$ 2016, *Moment/Sum-of-Squares Hierarchy for Complex Polynomial Optimization.*

INFORMS 2016, Hawaii, June 14$^{\text{th}}$ 2016, *Moment/Sum-of-Squares Hierarchy for Complex Polynomial Optimization.*

Université Paul Sabatier, Toulouse, France, worshop titled "LMIs, Semidefinite Programming, and Quantum Information Theory 2016", January 23rd 2016, *Complex Polynomial Optimization and its Application to Power Systems.*

Tokyo Tech, December 8th 2015, *Complex Polynomial Optimization and its Application to Power Systems.*

University of California, Irvine, November 24th 2015, *Complex Polynomial Optimization and its Application to Power Systems.*

University of California, Berkeley, November 20th 2015, *Complex Polynomial Optimization and its Application to Power Systems.*

Caltech, November 19th 2015, *Complex Polynomial Optimization and its Application to Power Systems.*

University of Illinois at Urbana-Champaign, November 17th 2015, *Complex Polynomial Optimization.*

University of Illinois at Urbana-Champaign, November 16th 2015, *Complex Structure of the Optimal Power Flow Problem.*

Argonne National Laboratory, November 13th 2015, *Complex Polynomial Optimization and its Application to Power Systems.*

University of Wisconsin-Madison, November 11th 2015, *Complex Polynomial Optimization and its Application to Power Systems.*

ETH Zürich, October 29th 2015, *Convex Relaxations of ACOPF in Real and Complex Numbers.*

Invited talk at Universität Konstanz with Prof. M. Putinar and Prof. C. Scheiderer, October 7th 2015, *Applications of Quillen's Property.*

Seminar at the R&D department of the French transmission system operator RTE, Versailles, December 17th 2014, *ACOPF: Semidefinite Programming Applied to PEGASE Network.*

"Closed doors" event at the French transmission system operator RTE involving all departments, June 16th 2014, *New Approach for Active and Reactive Optimization of Electricity Transmission Networks.*

IBM and RTE workshop on the convexification of the optimal power flow problem, Dublin, April 23rd 2014, *Moment-SOS Approach for Optimal Power Flow.*

Presentations at the optimization workshop of the French transmission system operator RTE on May 24rd 2013, September 17th 2013, and October 8th 2015.

Professional service

Reviewer of SIAM Journal on Optimization, IEEE Transactions on Power Systems, IEEE Power Engineering Letters, and IEEE Transactions on Smart Grid.