Vincent Leclère

Researcher Hab. at École des Ponts in Stochastic Optimization

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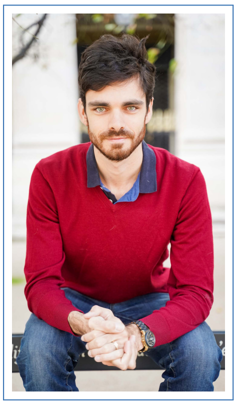

Research interests

Theory	Multistage Stochastic Programming, Data-driven optimization, Robust optimization, Decomposition methods, Dynamic programming, Convex optimization, Risk measures
Applications	Energy, SmartGrid, Microgrid, Supply chain, Transportation, Machine learning.

Education

2023 **Habilitation in Mathematics (HDR)**, *UGE*, Champs sur Marne, France
Exact methods and applications of optimization under uncertainty.

2014 - 2015 **Post-Doctorate in Operation Reseach**, *Berkeley*, California
Robust Sketching with Laurent El Ghaoui.

2011 - 2014 **PhD. in Stochastic Optimization**, *ENPC*, France
Contributions to Decomposition Method in Stochastic Optimization. With Optimisation & Systèmes team of CERMICS, with M. De Lara and P. Carpentier as advisors.

2009 - 2011 **Master of Optimization and Game Theory**, *UPMC*, France, with very high honors
Specialization in Stochastic Optimization.

2009 - 2011 **Master in Financial Mathematics**, *UMLV*, France, with very high honors
Stochastic processes and numerical methods.

2010 - 2011 **Cursus Ingénieur du Corps des Ponts, des Eaux et des Fôrets**, *ENPC*

2006 - 2010 **Ingénieur Polytechnicien Program**, *École Polytechnique*
Applied math specialization.

2004 - 2006 **Preparatory school**, *Lycée Sainte Geneviève*, Versailles
Maths, Physics and chemistry.

Publications

Preprint

2023 **Duality of upper bounds in stochastic dynamic programming**, *BFP Da Costa, V. Leclère*
Optimization Online preprint

2023 **Joint Production and Energy Supply Planning of an Industrial Microgrid**, *Z. Fornier, D. Grosso, V. Leclère*
arXiv preprint

Published work

2023 **Exact quantization of multistage stochastic linear problems**, *M. Forcier, S. Gaubert, V. Leclère*
Accepted in SIAM journal on Optimization. *Best student paper award at CMS-ECSO 2022.*

2023 **Robust limit analysis theory for computing worst-case limit loads under uncertainties**, *J. Bleyer, V. Leclère*
Book Chapter in Direct Methods for Limit State of Materials and Structures: Advanced Computational Algorithms and Material Modelling

2023 **Convergence of trajectory following dynamic programming algorithms for multistage stochastic problems without finite support assumptions**, *M. Forcier, V. Leclère*
Accepted in Journal of Convex Analysis.

2023 **Dual sddp for risk-averse multistage stochastic programs**, *BFP. Da Costa, V. Leclère*
Published in Operations Research Letters.

2022 **Generalized adaptive partition-based method for two- stage stochastic linear programs: Geometric oracle and analysis**, *M. Forcier, V. Leclère*
Published in Operations Research Letters. *2022 ORL Best paper award.*

2020 **Mathematical programming for influence diagrams**, *A. Parmentier, V. Cohen, V. Leclère, G. Obozinski, J. Salmon*
Published in Informs Journal on Optimization.

2019 **Exact converging bounds for Stochastic Dual Dynamic Programming via Fenchel duality**, *V. Leclère, P. Carpentier, J-Ph. Chancelier, A. Lenoir, F. Pacaud*
Published in SIAM Journal on Optimization

2019 **Epiconvergence of relaxed stochastic optimization problems**, *V. Leclère*
Published in Operations Research Letters.

2018 **On risk averse competitive equilibrium Optimization**, *H. Gérard, V. Leclère, A. Philpott*
Published in Operations Research Letters.

2018 **Stochastic decomposition applied to large-scale hydro valleys management** , *P. Carpentier, J-Ph. Chancelier, F. Pacaud, V. Leclère*
Published in European Journal of Operation Research

2016 **Building up Time-Consistency for Risk Measures and Dynamic Optimization**, *M. De Lara, V. Leclère*
Published in European Journal of Operation Research.

2015 **On the convergence of decomposition methods for multi-stage stochastic convex programs**, *P. Girardeau, V. Leclère, A. Philpott*
Published in Mathematics of Operation Research.

2013 **Priority option: the value of being a leader**, *M. Grasselli, V. Leclère, M. Ludkovski*
Published in International Journal of Theoretical and Applied Finance.

Peer-reviewed proceedings

2018 **A stochastic multi-item lot-sizing problem with bounded number of setups**, *E. De Saint Germain, V. Leclère, F. Meunier*
ICORES 2017 Proceeding

2017 **Efficient Smoothed Concomitant Lasso Estimation for High Dimensional Regression**, *E. Ndiaye, O. Fercoq, A. Gramfort, V. Leclère, J. Salmon*
Published in J. Phys.: Conference Series.

Young researchers advising

PhD Students

2023 - … **Jonathan Hornewall**, *Ecole des Ponts and IPP's funding*, Forthcoming
In collaboration with Stéphane Gaubert

2022 - … **Vitor Luiz Pinto de Pina Fereira**, *In partnership with TotalEnergies*

2022 - … **Zoé Fornier**, *In partnership with Metron Energy*

2019 - 2022 **Maël Forcier**, *Ministère de la transition écologique's funding*
In collaboration with Stéphane Gaubert, supervised by Jean-Philippe Chancelier

2015 - 2018 **Étienne de Saint Germain**, *In partnership with Argon Consulting*
In collaboration with Frédéric Meunier

Postdoctorates

2021 - 2023 **Carlos Moreno**, *Chair Supply chain of Tomorrow's funding*

2018 - 2019 **Regan Baucke**, *DIM Math'Innov's funding*
Supervised by Jean-Philippe Chancelier

Grants and industrial contracts

Current contracts

2022 - 2025 **Optimization of an isolated hybrid system (PI)**, *TotalEnergies*, €
Industrial contract funding for a PhD thesis aiming at optimizing the energy production plan of an isolated system with thermal production, renewable energies and energy storage.

2021 - 2024 **Optimization of a system coupling industrial production, renewable energy and energy storage (PI)**, *Metron Energy*,
CIFRE funding for a PhD thesis aiming at optimizing the coupled production and energy procurment short-term plan of an industrial micro-grid.

2021 - 2023 **Mathematical model and solution methods for resilient and green supply chain design (PI)**, *Chair Supply Chain of Tomorrow*,
Industrial contract with a consortium of companies, aiming at proposing a multi-objective model for supply chain design. Funding an 18 months post-doc position.

2021 - 2023 **Reverse logistic inventory routing (co-PI)**, *Renault*,
Industrial contract tackling a split-delivery multi-item large scale inventory routing problem. Focus on the strategical problem to select regular routes at a discounted price.

2019 - 2023 **Two-scale optimization problems (PI)**, *Programme Gaspard Monge pour l'Optimisation et la recherche opérationnelle - EDF*,

Past contracts

2018 - 2019 **Exact bounds for stochastic optimization (co-PI)**, *DIM-MathInnov*,
Institutional funding covering a one-year post-doctorate position.

2015 - 2018 **Balancing cost and flexibility in supply chain (co-PI)**, *Argon Consulting*,
CIFRE funding for a PhD thesis aiming at balancing cost and flexibility for tactical decisions (lot-sizing) and for strategical decision (sourcing strategy).

2016 - 2017 **Equilibrium and games in energy (PI)**, *Programme Gaspard Monge pour l'Optimisation et la recherche opérationnelle - EDF*,

2015 - 2016 **Epi-splines for solar energy prevision (PI)**, *Programme Gaspard Monge pour l'Optimisation et la recherche opérationnelle - EDF*,

2014 - 2015 **Robust Sketching for Structured Multi-Instance Optimization with Uncertainty**, *Programme Gaspard Monge pour l'Optimisation et la recherche opérationnelle - EDF*,

2013 - 2016 **SunHydro Project**, Optimal management of an hydroelectric storage coupled with a renewable energy production unit

2012 - 2013 **Décomposition/Coordination en commande optimale stochastique - StochDec**, Programme Gaspard Monge pour l'Optimisation et la recherche opérationnelle - EDF

2012 - 2014 **Optimization Methods for Smart Grid**, report for the Conseil Français de l'Énergie, french member of the World Energy Council

Contributions to the scientific community

Conference and workshop organization

2025 Organizer of the ICSP XVII conference. This is the main event in the field of stochastic programming (env. 400 participants).

2023 Organizer of the 2023 Smart Energy and Stochastic Optimization (SESO) workshop at École des Ponts

2023 Co-organizer of the Julia Days workshop at CNAM, Paris

2023 Organizer of mini-symposiums on SDDP at ICSP

2021 - ... Co-organizer of the decision, algorithm and geometry seminar between CERMICS and CMAP

2021 Organizer of a worshop on robust and stochastic optimization methods at École des Ponts

2020 Contribution to the organization of the 2020 SMAI-MODE conference

2019 Co-organizer of a winter school at CIRM (Luminy)

2019 Co-organizer of a workshop on Multi-Stage Stochastic Optimization for Clean Energy Transition at Banff International Research Station (Oaxaca, Mexico)

2018 Organizer of a stream of invited sessions on SDDP at ISMP

2016 Organizer of a mini-symposium on SDDP at ICSP

2014 - 2018 Contribution to the organization of Smart Energy and Stochastic Optimization (SESO) workshop at Ecole des Ponts

Position in scientific communities

2023 - ... Member by right of the Committee on Stochastic Programming of the Mathematical Programming Society

2023 - ... Vice President for industrial relations of the SMAI steering committee

2018 - ... Elected member of the SMAI-MODE steering committee

Evaluation of peers

2022 ROADEF best student paper award committee member

2020 - 2021 Nicholson Prize committee member for best paper student

2012 - ... Reviewer of numerous scientific journals (notably MP, MPC, SiOPT, OR, ORL, EJOR...)

Contributions to the school life

Forthcoming Candidate to be CERMICS's optimization team referent

2019 - ... Elected member of the Council of Teaching and Research (CER) of École des Ponts

2019 - 2020 Member of a task force on mathematics at École des Ponts

2018 - ... Author of multiple-choice tests for ParisTech international students.

2016 Invited speaker to the OPECST (Office Parlementaire d'Evaluation des Choix Scientifiques et Technologiques) on the topic of energy transition

2015 - ... Responsible for the CERMICS's library

2012 - 2014 Member of a task force on energy in the École des Ponts curriculum

Teaching

Current teachings

2023 **Stochastic and Robust optimization***, *5th year course*, MPRO, (24h)
2018 - 2023 **Stochastic Optimization***, *5th year course*, University Paris-Saclay, (15h)
2020 - 2023 **Convex Optimization***, *4th year course*, ENPC, (30h)
2015 - 2023 **Operation Research and Transportation***, *3rd year course*, ENPC, (15h)

Past teachings

2017 - 2020 **Data Driven Robust Optimization***, *5th year course*, ENPC, (15h)
2015 - 2020 **Optimization and Energy***, *3rd year course*, ENPC, (15h)
2017 - 2020 **Finding an optimal board game strategy***, *3rd year project*, ENPC, (10h)
2010 - 2020 **Optimization and control**, *4th year course*, ENPC, (10h)
2015 - 2018 **Introduction to Optimization**, *3rd year course*, ENPC, (12h)
2013 - 2017 **Stochastic Optimization**, *5th year course*, MPRO, (9h)
2011 - 2014 **Differentiable optimization**, *4th year course*, ENSTA, (24h)
2011 - 2013 **Introduction to probability**, *3rd year course*, ENSTA, (24h)
2011 - 2013 **Le risque dans tous ses états**, *thematic week*, ENPC, (10h)

Knowledge transfer (Industrial courses)

2023 **Stochastic Optimization**, *TotalEnergies*, (12h)
2022 **Stochastic Optimization**, *RTE*, (6h)
2021 **Multiobjective Optimization**, *Chair Supply Chain of Tomorrow*, (3h)
2021 **Stochastic Optimization**, *Metron Energy*, (6h)
2020 - 2022 **Stochastic and Robust Optimization**, *Air France*, (8h)
2020 **Stochastic Optimization**, *Total Energies*, (6h)
2019 **Stochastic Optimization**, *CNRS Interface Winter School*, CIRM Luminy, (15h)
2016 **Stochastic Optimization**, *SESO Winter School*, ENPC, (6h)
2015 **Stochastic and Robust Optimization**, *IRT System'X*, (6h)
2013 **Stochastic Optimization**, *XM-Columbia*, (6h)
2012 **Progressive Hedging**, *practical session of 2-week summer school*, (8h)

*: course responsability