

Tangi Migot  
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Tangi\_Migot

# Tangi Migot

## Doctor in Applied Mathematics

### Positions

#### Current position, since 1th October 2018, University of Guelph

Postdoctoral research associate in the department of Mathematics & Statistics. **Subject:** Generalized Nash equilibrium problems and applications.

#### 2018 July. - 2018 Sep., University of Sherbrooke

Postdoctoral research associate financially supported by a grant of excellence for foreign researches from the FRQNT. **Subject:** Coding a solver for degenerate non-linear optimization problems.

#### 2018 Apr. - 2018 Jun., INRIA de Rennes

Postdoctoral research associate in the team FLUMINANCE. **Subject:** Numerical aspects of dynamical complementarity problems.

#### 2017 Oct. - 2017 Dec., IETR-INSA de Rennes

Postdoctoral research associate. Short project financially supported by Thales and in a collaboration with IRMAR. **Subject:** Synthesis and optimization of metasurfaces.

#### 2014 Oct. - 2017 Sep., IRMAR-INSA de Rennes

PhD student with teaching over the period (2015 Sep.-2017 Jun.).

#### 2014 May - 2014 Sep., INRIA de Rennes

Internship in the team SAGE.

### Education

#### 2014 - 2017, IRMAR-INSA de Rennes

PhD in applied mathematics under the supervision of Mounir Haddou and Jean-Pierre Dussault.

**Subject:** Contributions to numerical methods for complementarity problems and mathematical programs with complementarity constraints.

**Reviewers:** S. Adly (Université de Limoges) et C. Kanzow (Universität de Würzburg).

**Jury:** S. Adly (Université de Limoges), J. Erhel (INRIA Rennes), J. C. Gilbert (Président du jury, INRIA Paris), O. Ley (INSA de Rennes) et C. Sagastizabal (Rio de Janeiro).

#### 2011 - 2014, INSA de Rouen

Engineer diploma " Génie mathématique".

**End-of-study internship** at INRIA Rennes supervised by Jocelyne Erhel.

**Subject:** Mathematical analysis of geochemical models.

#### 2013 - 2014, University of Rouen

Master 2 in Fundamental and Applied Mathematics.

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## Publications

### Journal Publications

1. with L. Abdallah and M. Haddou, *Solving absolute value equation using complementarity and smoothing functions*, Journal of Computational and Applied Mathematics, Vol. 327, 2018, pp. 196-207, doi:10.1016/j.cam.2017.06.019.
2. with M. Haddou and J. Omer. *A generalized direction in interior point method for monotone linear complementarity problems*, Optimization Letters, 2018, pp. 1-19, doi:10.1007/s11590-018-1241-2.
3. with J.-P. Dussault and M. Haddou. *Mathematical Programs with Vanishing Constraints: Constraint Qualifications, their Applications, and a New Regularization Method*, Optimization, 68:2-3, pp. 509-538, 2018, doi:10.1080/02331934.2018.1542531.
4. with J. Erhel. *Characterizations of Solutions in Geochemistry: Existence, Uniqueness and Precipitation Diagram*, Computational Geosciences, 23:3, pp. 523–535, 2019, doi:10.1007/s10596-018-9800-2.
5. with L. Abdallah and M. Haddou. *A Sub-Additive DC Approach to the Complementarity Problem*, Computational Optimization and Applications, 73:2, pp. 509-534, 2019, doi:10.1007/s10589-019-00078-w.
6. with M. Haddou. *A Smoothing Method for Sparse Optimization over Convex Sets*, Optimization Letters, (online) Feb. 2019, pp. 1-17, doi:10.1007/s11590-019-01408-x.

### Preprints

7. with M. Haddou and J.-P. Dussault. *The new butterfly relaxation method for mathematical program with complementarity constraints*, optimization-online.org, 2016.
8. with M. Haddou, J.-P. Dussault and A. Kadrani. *How to compute an M-stationary point of the MPCC*, optimization-online.org, 2017.
9. with J.-P. Dussault and M. Haddou. *A unified framework of regularization methods for degenerate non-linear optimization models*, HAL, 2018.
10. with J. Omer. *Vertex order with optimal number of adjacent predecessors*, HAL, 2019.
11. with M. Cojocar. *A parametrized variational inequality approach to compute all the solutions of the generalized Nash equilibrium problem*, submitted, 2019.
12. with M. Cojocar. *A decomposition method for convex generalized Nash equilibrium problems*, submitted, 2019.

### Conference Publications

1. with M. Haddou. *A Smoothing Method for Sparse Optimization over Polyhedral Sets*, Springer, Modelling, Computation and Optimization in Information Systems and Management Sciences Proceedings of the 3rd International Conference MCO 2015 - Part I, 359, pp.369-379, 2015, Advances in Intelligent Systems and Computing.
2. with L. Abdallah and M. Haddou. *A Sub-Additive Merit Function for Complementarity Problems and Application*, Proceedings of the International Conference on Learning and Optimization Algorithms: Theory and Applications. ACM, 2018.

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## Scientific Communications

### Talks in Conferences

- with [J. Erhel](#) (INRIA Rennes). *About Some Numerical Models for Geochemistry*. HPSC Hanoi, 2015.
- with M. Haddou. *A Smoothing Method for Sparse Optimization over Polyhedral Sets*, MCO Metz, 2015.
- with [F. Monteiro](#) et al. (Luxembourg Centre for Systems Biomedicine, University of Luxembourg, Luxembourg). *Robust Prediction of Minimal Medium Composition Using Sparse Optimization*, poster in 4th Conference on Constraint-Based Reconstruction and Analysis, Heidelberg 2015.
- with [J. Erhel](#). *About Some Numerical Models for Geochemistry*. Workshop MoMas on reactive transport, 2015.
- with M. Haddou. *A new direction in polynomial time interior-point methods for monotone linear complementarity problem*. Journées SMAI-MODE, Toulouse, 2016.
- with [J. Erhel](#) and S. Sabit (INRIA Rennes). *Reactive transport simulations using a global approach*. Computational Methods in Water Resources, Toronto 2016.
- with J.-P. Dussault and M. Haddou. *A new relaxation method for Mathematical Program with Complementarity Constraint*, poster in HJNET, Rennes, 2016.
- with J.-P. Dussault and M. Haddou. *A new relaxation method for Mathematical Program with Complementarity Constraint*, INFORMS Annual Meeting, Nashville, 2016.
- with J.-P. Dussault, [M. Haddou](#) and A. Kadrani. *Sur de nouvelles méthodes numériques pour les problèmes d'optimisation avec contraintes de complémentarité*, Journée Rennes-Nantes d'Analyse, Nantes, 2017.
- with J.-P. Dussault, M. Haddou, [E. Joannopoulos](#) and A. Kadrani. *Some convergence properties of regularization and penalization schemes for MPCCs*, SIAM Conference on Optimization, Vancouver, 2017.
- with J.-P. Dussault, M. Haddou and A. Kadrani. *How to compute a stationary point of the MPCC ?*, EUROPT, Montréal, 2017.
- with J.-P. Dussault and M. Haddou. *Computation of a local minimum of the MPCC*, PARAOPT XI, Prague, 2017.
- with J.-P. Dussault and [M. Haddou](#). *The new butterfly relaxation method for mathematical program with complementarity constraints*, Control and Optimization conference on the occasion of Frédéric Bonnans 60th birthday, Paris, 2017.
- with J.-P. Dussault and M. Haddou. *Regularization methods for degenerate non-linear programs*, 4th Conference on OMS, Havana, 2017.
- with [J. Erhel](#). *Modèles de géochimie à l'équilibre*, Journée Rennes-Nantes d'Analyse, ENS Rennes, 2018.
- with L. Abdallah and M. Haddou. *A sub-additive merit function for complementarity problems and application*, LOPAL, Rabat, 2018.
- with M. Cojocaru. *On the KKT conditions of the GNEP*, CMS Winter Meeting, Vancouver, 2018.
- with J.-P. Dussault and S. Goyette. *Stopping.jl: A framework to implement iterative optimization algorithms*, Journées de l'optimisation 2019, Montréal, Québec (invited in session Optimization in Julia).
- with [J. Erhel](#). *Optimization problems in geochemistry*, ETNA25, Santa Margherita di Pula, Italy, 2019.

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- with M. Cojocaru. *A Decomposition Method for Convex Generalized Nash Equilibrium Problems*, EURO, Dublin, 2019.
- with L. Abdallah and M. Haddou. *Solving mathematical programs with complementarity constraints with a penalization approach*, WCGO, Metz, 2019.
- with B. Hamlat and J. Erhel. *Optimization and Complementarity Problems in Geochemistry*, WCGO, Metz, 2019.
- with J. Erhel. *Optimization and Complementarity Problems in Geochemistry*, WCGO, Metz, 2019 (invited in session Complementarity Problems: Applications, Theory and Algorithms).
- with J.-P. Dussault, M. Haddou and A. Kadrani. *On a regularization-active set algorithm to solve the MPCC and its implementation*, IC-COPT, Berlin, 2019.
- with M. Cojocaru. *On decomposition methods for generalized Nash equilibrium problems*, MOPTA, Lehigh, 2019.

### Seminars and Invited Talks

- with M. Haddou. *A Smoothing Method for Sparse Optimization over Polyhedral Sets*, Groupe de Travail Programmation Mathématiques, Dijon, 2015.
- *Problèmes de complémentarité en optimisation non lisse*, séminaire LANDAU des jeunes doctorants en analyse, Rennes, 2015.
- *Méthodes numériques pour l'optimisation non-linéaire*. Séminaire LANDAU des jeunes doctorants en analyse, Rennes 2016.
- *Une méthode numérique pour les problèmes d'optimisation bi-niveaux*. Séminaire LANDAU des jeunes doctorants en analyse, Rennes 2017.
- *Problèmes d'optimisation sous contraintes et parcimonie*, séminaire informatique de l'Université de Sherbrooke. Sherbrooke, 2017.
- *Optimisation avec contraintes de cardinalité pour les statistiques*, séminaire statistique de l'Université de Rennes. Rennes, 2018.
- with J.-P. Dussault and M. Haddou. *On regularization methods for MPCCs and degenerate non-linear programs*, Variational Analysis Challenges in Energy, Castro Urdiales, 2018.

## Teaching and Mentoring

### Teaching

- 2015-16 64h in Licence at INSA de Rennes (Analysis).
- 2016-17 64h in Licence and Master at INSA de Rennes (Geometry and Optimization).
- 2017-18 Mentoring of an interdisciplinary project with graduate students.
- 2018-19 Guest lecturer in the course *Optimization I* at the University of Guelph (hrs.: 8h - level: Master)
- MATH 2080 *Elements of Calculus II* Winter 2019, University of Guelph
- MATH 2000 *Proofs, Sets and Numbers* Fall 2019, University of Guelph

### Master's Internship

- April to June 2017: "Relaxation methods for MPCC", Cao Van Kien (Université Paris 13).
- April to June 2017: "Optimization methods for complementarity problems", Nguyen Dinh Duong (Université Paris Est).

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## Grants

**2014 - 2017, Ministère Enseignement Supérieur et de la Recherche**  
PhD grant awarded by the country state of **68 811,96€**.

**2016, École des Docteurs de l'Université Bretagne-Loire et du Conseil Régional de Bretagne**  
Mobility grant of **2 000€**.

**2016, COST/MINO**  
Grant to join COST/MINO PhD School of **500€**.

**2017, Groupe de Recherche en Recherche Opérationnel**  
Mobility grant of **700€**.

**2017, École des Docteurs de l'Université Bretagne-Loire et du Conseil Régional de Bretagne**  
Mobility grant of **1 000€**.

**2018, Fonds de recherche du Québec - Nature et technologies (FRQNT)**  
Post-doctoral grant of **12 000CAN\$**.

**2019, ICCOPT 19 Berlin**  
Travel grant of **400€** to attend conference and summer school.

## Administrative and Scientific Responsibilities

### Organization of Scientific Events

- Member of the organizing committee of the conference HJNET 2016 in Rennes, 05/30 to 06/03.
- Member of the organizing committee of the Groupe de Travail Programmation Mathématique du Groupe de Recherche en Recherche Opérationnel 2016 à Rennes, 06/13-14.
- Co-organizer of the stream *Variational analysis, games and intertwined optimization problems* in EURO 19 conference in Dublin (18 talks).
- Co-organizer of the session *Continuous optimization and applications* in AMMCS-19 conference in Waterloo (6 talks).

**2014 - 2017, Administrative Responsibilities**  
Member of the council of IRMAR-INSA.

## Science Popularization and PhD School

**2014, Rouen (France)**  
SEME (1 week math problem posed by a company) *Modelling Gas Regulators* for GCE group.

**2016, Nice (France)**  
SEME *Re-calibration de modèles pharmacocinétiques*. for ExactCure.

**2016, Rome (Italy)**  
COST/MINO PhD School on Advanced Optimization Methods.

**2019, Berlin (Germany)**  
Summer school from Aug 3-4, 2019 at TU Berlin (*Large scale and PDE constrained optimization & Optimization and Machine Learning*).

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## Invited Visits

### 2015 Nov., Beyrouth (Lebanon)

eninvited by Lina Abdallah in Université Libanaise.

### 2016 Sep.-Dec., Sherbrooke (Canada)

invited by Jean-Pierre Dussault in Université de Sherbrooke.

### 2017 June-July, Sherbrooke (Canada)

invited by Jean-Pierre Dussault in Université de Sherbrooke.

## Skills

### Languages

- German (academic)
- English (fluent)

### Programming

- C/C++
- Julia
- Java

### Scientific Software

- Matlab
- Maple
- Fluent

## Interests

### Personal

International Master of chess (best elo rating: 2407).