

Lettre Mode, Décembre 2018

## Table des matières

-- Thèses, postdocs et postes --

- 1) Open PhD and Post-doc positions in Brussels on games and reactive systems
- 2) PhD position in algebraic algorithms in games and optimization, Paris
- 3) PhD positions in ITN POEMA
- 4) Poste MCF Paris 1, Mathématiques appliquées à l'économie et à la finance
- 5) Recrutement de chargés de travaux dirigés à l'université Paris 1
- 6) Three postdoc positions and one Ph.D. position in Differential Geometry and Optimization, Germany

-- Conférences et évènements --

- 7) 17 EUROPT Workshop on Advances in Continuous Optimization, Glasgow, June 28-29, 2019
- 8) Annonces de séminaires
- 9) Appel à organiser un "mini-symposium", ICIAM 2019. Deadline : 10/12/2018.
- 10) Congrès SMAI 2019, aide au financement de mini-symposia
- 11) Congrès SMAI 2019, appel à mini-symposia
- 12) FGS'2019, in Nice from September 17 to 20, 2019
- 13) Journée "Optimisation et Théorie de l'Equilibre", Avignon, 7 décembre 2018

## Inscription et désinscription

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## Contributions

Envoyez vos contributions en format simple texte en remplissant le formulaire à l'adresse suivante :

<http://www.lettremode.ovh>,

ou par mail à l'adresse suivante :

[contact@lettremode.ovh](mailto:contact@lettremode.ovh). Prière d'indiquer "pour la lettre MODE" dans l'objet du mail.

## Site officiel et twitter SMAI-MODE

<http://smi.emath.fr/spip.php?article330>

[https://twitter.com/smai\\_mode](https://twitter.com/smai_mode)

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- 1) Open PhD and Post-doc positions in Brussels on games and reactive systems

De : Gilles Geraerts

Non-Zero Sum Game Graphs:  
Applications to Reactive Synthesis and Beyond  
(5 years FWB ARC research project, 2016-2021)

VERILEARN:  
Verifying Learning Artificial Intelligence Systems (4 years Excellent of Science project,  
2018-2021) in collaboration with KULeuven and U Namur

Subgame perfection in graph games: (4 years PDR FNRS project, 2018-2021) in  
collaboration with U Mons

\* Positions. Several Post-Doc positions are open at the Université libre de Bruxelles (ULB).  
These positions are funded by three projects (listed above), under the lead of Prof. Jean-  
François Raskin, Prof. Gilles Geeraerts, and Dr. Emmanuel Filiot.

\* Summary of the research projects. Reactive systems are computer systems that maintain a  
continuous interaction with the environment in which they operate. Such systems are  
nowadays part of our daily life: think about common yet critical applications like engine  
control units in automotive, plane autopilots, medical devices, etc. Clearly, any flaw in such  
critical systems can have catastrophic consequences. Yet, they exhibit several characteristics,  
like real-time constraints, concurrency, parallelism, etc., that make them difficult to design  
correctly.

To ensure the design of reactive computer systems that are dependable, safe and efficient,  
researchers and industrials have advocated the use of so-called formal methods, that rely on  
mathematical models to express precisely and analyse the behaviours of those systems. A  
very popular formal method is model checking: it amounts to comparing a model of a system  
to its specification in order to find design errors early in the development cycle. Hence, model  
checking can be regarded as a sophisticated debugging method. In this project, we will attack  
a more scientifically challenging goal, called synthesis. We want to propose techniques  
(models, algorithms and tools) that, given a specification for a reactive system and a model of  
its environment, compute (synthesise) a correct system, i.e., one that enforces the  
specification no matter how the environment behaves. The main model that will be  
considered in the project is that of games played on graphs, we will seek to extend  
classic

results to the setting of non-zero sum games. More precisely, the four main research  
directions of those projects are:

- To define and study new models and solution concepts based on multi-player non-zero-sum  
games.
- To define and study new solutions concepts that avoid the fully adversarial assumption,  
because this assumption can be shown to be often too bold an abstraction of real systems.
- To exploit the multi-player, non zero-sum, games on graph model beyond the setting of  
reactive synthesis. Other potential domains of application include: biological systems, multi-  
agent systems, network routing, (real-time) scheduling, automata theory, etc
- To study how verification techniques can be lifted to be applicable to systems that uses  
learning

\* Starting dates. At any time during the project.

\* Salary. Annual net salary (after all taxes) starts at 2,421.51 euros/month for a Post-Doc

student, and at 1,964.92 euros / month for a PhD student. In addition, advantages include complete health insurance.

\* The research environment. ULB (<http://www.ulb.ac.be>) is a complete university located in the city of Brussels at the center of Europe (25.000+ students with 30% coming from abroad). The Formal Methods and Verification group is part of the Computer Science Department of the Faculty of Sciences. The group maintains a large number of active collaborations with other research groups in computer-aided verification across Europe and the USA. The group is also part of the Belgian Federated Center for Verification (<http://cfv.ulb.ac.be>) that gathers all the Belgian research groups active in computer aided verification and hosts a monthly seminar with renowned guest speakers. The working language is English.

\* Further information and application. Potential candidates can contact Prof. Raskin (jraskin[at]ulb[dot]ac[dot]be), Prof. Geeraerts (gigeerae[at]ulb[dot]ac[dot]be), and Dr. Emmanuel Filiot (efiliot[at]ulb[dot]ac[dot]be).

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## 2) PhD position in algebraic algorithms in games and optimization, Paris

De : Rida Laraki

A PhD position is available in the joint INRIA, CNRS, and Sorbonne Université (LIP6) team PolSys (<https://polsys.lip6.fr/>) in Paris. The position is funded by the ANR JCJC program GALOP (Games through the lens of ALgebra and OPTimization).

Scientific context:

Semidefinite programming (SDP) extends linear programming and has become a fundamental ingredient in polynomial and combinatorial optimization, complexity theory, game theory, quantum computing, control, signal processing, and computational finance. The standard tool to solve SDP problems is interior point methods. One of the current challenges is to exploit the underlying algebraic formulation to cope with the reliability issues of SDP and deduce more efficient algorithms. For such a task, we should exploit the algebraic and geometric structure of the polynomial systems that correspond to the optimization problem. With these algebraic and optimization tools, we can study the complexity of special classes of (continuous) stochastic games and obtain precise bounds.

We invite applications for a full-time PhD position for three years at the intersection of algebraic algorithms, optimization, and theoretical computer science, with a view towards applications in game theory.

A successful PhD candidate will work on one, or on a combination, of the following topics:

- Deduce efficient algorithms and precise complexity and degree bounds

for important classes of stochastic games based on algebraic formulations.

- Exploit the algebraic formulation of SDP to deal with reliability issues.
- Exploit the structure of polynomial systems, for example multi-homogeneity, sparsity, symmetry, properties of determinantal varieties, to introduce improved algorithms for Groebner basis and/or solving.
- Provide an efficient and certified open-source software for real solving univariate polynomials and polynomial systems.

Profile:

- MSc in computer science or (applied) mathematics.
- Strong background in algorithms, knowledge of complexity theory.
- Skills in a programming language like C or C++ is a definitely plus.
- High command of written and oral language.
- Ability to work in a team.

Application:

The application should include:

- Letter of interest.
- Scientific CV.
- Contact information of two references (Title, Name, organization, e-mail).

The starting date of the PhD is expected to be early 2019 or soon after.

Potential candidates should send their application or questions by the end of December 2018 to Elias Tsigaridas ([elias.tsigaridas@inria.fr](mailto:elias.tsigaridas@inria.fr)).

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### 3) PhD positions in ITN POEMA

De : Olivier cots

Lien : <https://easychair.org/cfp/POEMA-19-22>

POEMA is a Marie Skłodowska-Curie Innovative Training Network (2019-2022), offering

15 PhD positions

starting from September 2019.

See <https://easychair.org/cfp/POEMA-19-22> to apply for these positions.

The goal of the network is to train scientists at the interplay of algebra, geometry and computer science for polynomial optimization problems and to foster scientific and technological advances, stimulating interdisciplinary and intersectoriality knowledge exchange between algebraists, geometers, computer scientists and industrial actors facing real-life optimization problems.

Network partners:

Inria, Sophia Antipolis, France, (Bernard Mourrain)

CNRS, LAAS, Toulouse France (Didier Henrion)

Sorbonne Université, Paris, France (Mohab Safey el Din)

NWO-I/CWI, Amsterdam, the Netherlands (Monique Laurent)

Univ. Tilburg, the Netherlands (Etienne de Klerk)

Univ. Konstanz, Germany (Markus Schweighofer)

Univ. degli Studi di Firenze, Italy (Giorgio Ottaviani)

Univ. of Birmingham, UK (Mikal Kocvara)

Friedrich-Alexander-Universitaet Erlangen, Germany (Michael Stingl)

Univ. of Tromsø, Norway (Cordian Riener)

Artelys SA, Paris, France (Arnaud Renaud)

Associate partners:

IBM Research, Ireland (Martin Mevissen)

NAG, UK (Mike Dewar)

RTE, France (Jean Maeght)

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4) Poste MCF Paris 1, Mathématiques appliquées à l'économie et à la finance

De : Philippe Bich

Profil: Mathématiques appliquées à l'économie et à la finance

Profil recherche : La personne recrutée viendra renforcer le potentiel du centre d'économie de la Sorbonne en mathématiques appliquées au sein des axes "microéconomie théorique" ou "finance et modélisation". Elle devra s'intégrer dans un laboratoire interdisciplinaire regroupant des chercheurs en mathématiques, informatique, et économie. Elle devra être en mesure de conduire des recherches au plus haut niveau, et de publier dans les meilleures revues internationales, dans des domaines de l'économie ou de la finance mathématique comme l'optimisation, la décision, les réseaux, l'équilibre général, le choix social ou la théorie des jeux. Plus généralement, les enseignants-chercheurs de l'ufr ont vocation à s'intégrer à des projets de formation et de recherche interdisciplinaires en lien avec les sciences humaines et sociales.

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5) Recrutement de chargés de travaux dirigés à l'université Paris 1

De : Philippe Bich

Recrutement de chargés de travaux dirigés à l'université Paris 1

L'ufr de mathématique et informatique de l'université Paris 1 souhaite recruter des doctorants pour assurer des travaux dirigés d'algèbre, d'analyse et de probabilités en licence MIASHS (mathématiques et informatique appliqués aux sciences humaines et sociales) au second semestre de l'année 2018-2019. Les travaux dirigés ont lieu au centre Pierre Mendès France, 90 rue de Tolbiac 75013 Paris. La rémunération horaire est fixée réglementairement à 41 euros brut. Si vous êtes intéressés, merci d'envoyer cv et candidature

à [antoine.mandel@univ-paris1.fr](mailto:antoine.mandel@univ-paris1.fr).

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6) Three postdoc positions and one Ph.D. position in Differential Geometry and Optimization, Germany

De : Michel Thera

Lien : [https://www.tu-chemnitz.de/mathematik/part\\_dgl/index.en.php](https://www.tu-chemnitz.de/mathematik/part_dgl/index.en.php)

#### JOB OPENING

Three postdoc and one Ph.D. position

The work group has openings for three postdoc positions with a starting date of February 15, 2019 in the area of Optimization on Manifolds. In addition, we have an opening for a Ph.D. position in Differential Geometry and Optimization with a starting date of February 1, 2019. Please send your applications before December 19, 2018 as a PDF file to [roland.herzog@mathematik.tu-chemnitz.de](mailto:roland.herzog@mathematik.tu-chemnitz.de).

[https://www.tu-chemnitz.de/mathematik/part\\_dgl/documents/201811\\_two\\_postdocs\\_optimization\\_on\\_manifolds.pdf](https://www.tu-chemnitz.de/mathematik/part_dgl/documents/201811_two_postdocs_optimization_on_manifolds.pdf)

[https://www.tu-chemnitz.de/mathematik/part\\_dgl/documents/201811\\_PhD\\_differential\\_geometry\\_and\\_nonsmooth\\_optimization.pdf](https://www.tu-chemnitz.de/mathematik/part_dgl/documents/201811_PhD_differential_geometry_and_nonsmooth_optimization.pdf)

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7) 17 EUROPT Workshop on Advances in Continuous Optimization, Glasgow, June 28-29, 2019

De : Olivier cots

Lien : <https://www.euro-online.org/websites/continuous-optimization/news/europt-workshop-2019/>

17 EUROPT Workshop on Advances in Continuous Optimization

Glasgow, June 28-29, 2019

The 17th EUROPT Workshop on Advances in Continuous Optimization will be held in Glasgow, UK on June 28-29, 2019.

The EUROPT Workshop on Advances in Continuous Optimization is the annual event of the EUROPT continuous optimization working group of EURO (The Association of European Operational Research Societies). This 17th edition will take place in Glasgow just after the 30th European Conference on Operational Research, that will be held in Dublin, Ireland on June 23-26.

The submission system is not yet open.

Important Dates

Early bird registration: pending  
Abstract submission: pending  
Author registration: pending  
Workshop: June 28-29, 2019

Researchers interested in organizing a 3-talk session are invited to contact the Program Chair at [edmondo.minisci@strath.ac.uk](mailto:edmondo.minisci@strath.ac.uk), before December 15, 2018.

For more information, please contact us at [europt2019@icelab.uk](mailto:europt2019@icelab.uk), visit the workshop webpage and follow us on Twitter through #EUROPT2019 from @icelab\_uk.

Becoming member of EUROPT is easy and free of charge. Join us!

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## 8) Annonces de séminaires

Une rubrique pour signaler quelques liens pour les séminaires ayant lieu ce mois-ci et organisés dans nos laboratoires.

N'hésitez pas à l'alimenter, préférentiellement via un lien vers la page du séminaire.

Pour cela, envoyez un mail à l'adresse [contact@lettremode.ovh](mailto:contact@lettremode.ovh).

- Séminaire Parisien d'Optimisation (IHP)  
<https://sites.google.com/site/spoihp/>
- Séminaire du programme PGMO  
<https://www.fondation-hadamard.fr/fr/pgmo-seminars/seminars>
- Groupe de Travail CalVa de Calcul de Variations (suivant les séances (lieu : voir site) :  
<https://www.ljll.math.upmc.fr/fr/seminaires/article/gdt-calcul-des-variations>
- Groupe de Travail Analyse Non-linéaire et EDP (ENS et UPMC)  
[http://www.math.ens.fr/-Seminaires-?id\\_seminaire=14](http://www.math.ens.fr/-Seminaires-?id_seminaire=14)
- Séminaire Pluridisciplinaire d'Optimisation de Toulouse (lieu : voir site)  
<http://projects.laas.fr/spot/>
- Séminaire SAMOCOD (séminaire Avignon Montpellier Optimisation Contrôle et Dynamique)  
[http://www.i3m.univ-montp2.fr/index.php?option=com\\_content&view=article&id=59&catid=19&sem=618](http://www.i3m.univ-montp2.fr/index.php?option=com_content&view=article&id=59&catid=19&sem=618)
- Séminaire hebdomadaire de l'équipe MOD de l'Université de Limoges  
<https://indico.math.cnrs.fr/categoryDisplay.py?categId=36>
- Séminaire Parisien de Théorie des Jeux (IHP, salle 05, 201 ou 314)  
<https://sites.google.com/site/theoriesdesjeux/>

- Séminaire de Mathématiques Discrètes, Optimisation et Décision, Centre d'Economie de la Sorbonne et Université Paris 1  
<http://ces.univ-paris1.fr/membre/seminaire/MDOD/>
- Séminaire de géométrie sous-riemannienne - IHP  
<http://webusers.imj-prg.fr/~davide.barilari/seminar.php>
- Séminaire de l'équipe Statistique, Probabilités, Optimisation et Contrôle (SPOC) - IMB  
<https://math.u-bourgogne.fr/spip.php?page=seminairespoc>

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9) Appel à organiser un "mini-symposium", ICIAM 2019. Deadline : 10/12/2018.

De : Rida Laraki

Lien : <https://www.iciam2019.com>

DEADLINE FOR MINISYMPOSIUM PROPOSALS EXTENDED TO DECEMBER 10, 2018!

Find the category that best suits your proposal:

- Thematic Minisymposia, encompassing over 25 topics in Industrial and Applied Mathematics,

- Industrial Mathematics Minisymposia focused on different Mathematics-Industry aspects, Economic Activities of Industrial and Business Interest, and Societal Challenges.

For further information, please visit the Submissions & Calls section within the 'For Participants' menu tab at [www.iciam2019.com](http://www.iciam2019.com).

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10) Congrès SMAI 2019, aide au financement de mini-symposia

De : Rida Laraki

Appel à candidature : Aide au financement de mini-symposia pour le congrès SMAI 2019. Le comité de liaison de SMAI-MODE a décidé de financer jusqu'à quatre mini-symposia pour 1000 euros chacun en rapport avec les thématiques du groupe MODE. Pour postuler, veuillez adresser une copie de votre soumission SMAI à rida[dot]laraki[at]dauphine[dot]fr avant le 11 Janvier 2019.

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11) Congrès SMAI 2019, appel à mini-symposia



De : Rida Laraki  
Lien : <http://smai.emath.fr/smai2019/>

Le prochain Congrès SMAI (9ème Biennale Française des Mathématiques Appliquées et Industrielles) aura lieu à Guidel Plages (Morbihan) du 13 au 17 mai 2019.

Il est conjointement organisé par le Laboratoire de Mathématiques Jean Leray (Nantes) et la SMAI.

Comme à chaque édition, des mini-symposia regroupant 4 exposés de 30 minutes sur un thème précis seront programmés.

Les personnes souhaitant organiser un mini-symposium peuvent nous envoyer leur proposition à l'adresse [smai2019@smai.emath.fr](mailto:smai2019@smai.emath.fr), avant le 22 janvier 2019, en précisant  
- un titre et un résumé du thème proposé (de quelques lignes),  
- une liste d'orateurs pressentis.

Pour plus d'informations, consultez le site du congrès  
<http://smai.emath.fr/smai2019/>

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12) FGS'2019, in Nice from September 17 to 20, 2019

De : Jean-Baptiste Caillaud  
Lien : <http://fgs-2019.sciencesconf.org>

The 19th French-German-Swiss conference on Optimization will take place in Nice from September 17 to 20, 2019. This series of conferences began in 1980 at Oberwolfach and has gathered since French and German colleagues in optimization every other year. It is customary to invite a third country to participate.

In 2019, the invited country is Switzerland.

These conferences usually gather from 100 to 150 mathematicians and are the main meeting of European researchers in optimization in the broad sense. The 2019 edition is organized by LJAD and I3S labs from CNRS, and by Inria Sophia Antipolis Méditerranée center. The conference will be located on the Valrose campus of Université Côte d'Azur, on the heights of Nice.

More information: [fgs-2019.sciencesconf.org](http://fgs-2019.sciencesconf.org)

- Didier Auroux & Jean-Baptiste Caillaud, chairs of FGS'2019  
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13) Journée "Optimisation et Théorie de l'Equilibre", Avignon, 7 décembre 2018

De : Michel Thera

Le Laboratoire de Mathématique d'Avignon organise une journée "Optimisation et Théorie de l'Equilibre" à l'occasion du départ à la retraite du professeur Dinh The Luc. L'évènement aura lieu le vendredi 7 décembre 2018 sur le campus centre-ville de l'université d'Avignon. Il comprendra environ 8 exposés donnés par des spécialistes du domaine :

Didier Aussel (Perpignan), Giovanni Paolo Crespi (Varese), Emil Octavian ERNST (Aix-Marseille), Daniel GOURION (Avignon), Juan Enrique Martinez Legaz (Barcelone), Antoine SOUBEYRAN (Aix-Marseille), Michel THERA (Limoges), Michel VOLLE (Avignon).

Dinh The Luc est un spécialiste internationalement reconnu dans les domaines de l'optimisation vectorielle, de l'analyse non lisse et de l'analyse convexe généralisée.

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Fin de la lettre MODE  
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