Curriculum Vitae

Beniamin BOGOŞEL

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Poziţia actuală: Centrul de Matematici Aplicate, École Polytechnique
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Studiile Efectuate şi Diplomele Obţinute

mai 2024	**Susţinerea Lucrării de Abilitare** - École Polytechnique, Institut Polytechnique de Paris, Palaiseau, Franţa. Titlu: *Shape optimization: theoretical, numerical and practical aspects*
2012-2015	**Doctorat** - Université Joseph Fourier, Grenoble, France, directori de teză: Dorin BUCUR şi Édouard OUDET. Titlu: *Shape optimization and spectral problems*
2014	**Agrégation externe de mathématiques** - cel mai prestigios examen de titularizare în Franţa
2007-2012	**Studii de Licenţă şi Master** - Universitatea de Vest Timişoara, Romania

Experienţa Profesională

2019-2021	co-supervizare împreună cu G. ALLAIRE – postdoc M. GODOY, École Polytechnique, Institut Polytechnique de Paris, Franţa, finaţare din proiectul SOFIA
2018-2021	co-supervizare împreună cu G. ALLAIRE – teza doctorat M. BIHR, École Polytechnique, Institut Polytechnique de Paris, Franţa, finaţare din proiectul SOFIA
2018-	**Conferenţiar în Matematică Aplicată**, École Polytechnique, Centre de Mathématiques Appliquées
2017-2018	**Postdoc** - CMAP, École Polytechnique, CNRS - Project SOFIA supervizat de Grégoire ALLAIRE
2016-2017	**Postdoc FSMP** - Département de Mathématiques et Applications, École Normale Supérieure Paris, supervizat de Virginie BONNAILLIE-NOËL
2015-2016	**Asistent** - Université Grenoble Alpes, Laboratorul Jean Kuntzmann

Proiecte de Cercetare

2024	Proiect de mobilitate PN-IV-P2-2.2-MCT-2024-0054 – co-PI – UEFISCDI, Romania – PI: Valeriu BEIU
2018-2023	Proiect SHAPO – membru – Agence Nationale de la Recherche, France – PI: Jimmy LAMBOLEY – https://anr.fr/Projet-ANR-18-CE40-0013
2017-2023	SOlutions pour la Fabrication Industrielle Additive métallique (SOFIA) Project – membru (postdoc, co-supervizor teză de doctorat şi postdoc) – Banque Publique d'Investissement, France
2024-2028	STOIQUES Project – membru – Agence Nationale de la Recherche, France – PI: Yannick PRIVAT

Interese de cercetare

· Calcul variaţional, optimizare
· Design optimal pentru aplicaţii industriale - fabricaţie aditiv ă
· Simulări numerice în optimizarea formelor: metoda level-set, Γ-convergenţă, parametrizări exacte
· Optimizare pentru probleme spectrale
· Probleme de partiţionare optimală
· Modelizare şi simulare numerică

Supervizare Academică

Phd:	MARTIN BIHR, 2018-2021, co-director cu Grégoire ALLAIRE, teză CIFRE în colaborare cu Safran Tech
Postdoc:	MATIAS GODOY, 2019-2021, în colaborare cu Grégoire ALLAIRE
Internship:	MEHDI MAKNI, 2021 – algoritmi de partiţionare optimală pentru probleme spectrale, anul 2, programul Bachelor, Ecole Polytechnique
2020-2024	Supervizare de 3-4 proiecte pe an, efectuate de grupe de 2 sau 3 studenţi de anul 4, pe subiecte legate de modelizare, simulare şi optimizare.

Experienţa didactică

École Polytechnique

2018-	Optimizare numerică: curs anul 2 (14 ore curs+seminariile aferente/an)
2018-	Optimizarea formelor: curs anul 5 (40 ore/an)
2018-2020	Introducere în analiza numerică: anul 4, seminarii (40 ore/an)
2020-	Optimizare şi Control Optimal: seminarii, anul 4 (40 ore/an)
2018-2019	Introducere în Optimizarea Formelor, ENSTA Paris, anul 5
2019-	Programul doctoral Fabrication Additive Paris-Saclay: Curs Doctoral de Optimizarea Formelor, împreună cu G. Allaire
2024	Optimizare cu constrângeri tip ecuaţii cu derivate parţiale, Curs Master 2, Master de Sciences & Technologies, Sorbonne Université, Paris

Experienţa anterioară

2015-2016	Université de Grenoble: Matematică elementară pentru finanţe
2012-2015	Université de Savoie: Analiză, Algebră liniară, Probabilităţi

Activităţi de Reviewer

Am scris recenzii pentru următoarele jurnale:

Applied Mathematics and Optimization, Applied Mathematics and Computation, ESAIM: Control Optimization and Calculus of Variations, Acta Applicandae Mathematicae, Structural and Multidisciplinary Optimization, SIAM Journal on Scientific Computing, SIAM Journal of Control and Optimization, SIAM Journal on Mathematical Analysis, Evolution Equations and Control Theory, Nonlinearity, The European Physical Journal E, Applied Mathematics Letters, Results in Mathematics, Materials & Design, Archive of Applied Mechanics, Computational Mathematics, Numerical Algorithms, Nonlinear Analysis, Numerical Methods for Partial Differential Equations, Computers and Mathematics with Applications

Organizare de Evenimente Ştiinţifice

2019	Conferinţa *Journées Optimisation de Formes et Applications (JOFA 4)*, 28-29 octombrie 2019, Ecole Polytechnique, website: https://jofa.sciencesconf.org/
2022–present	Organizator al Seminarului de Analiză al laboratorului CMAP, École Polytechnique
2023–present	Membru ales în consiliul laboratorului CMAP

Participare în comisii

2023	Membru în comitetul de selecţie pentru o poziţie "Maître de Conferences" (conferenţiar) la Universitatea Grenoble-Alpes

Jurii de teză

2021	Martin BIHR, Ecole Polytechnique, (co-director)
2024	Fernando HÜBNER SCHERER, Ecole Polytechnique (preşedintele comisiei)
2024	Luca GORINI, Ecole Polytechnique, Université Avignon

Prezentări Orale, Conferinţe, Seminarii

· *Optimal Partitions and Anisotropic Perimeter*, Seminar, Université de Savoie, 2013
· *Eigenvalue optimization under perimeter constraint*, ANR Optiform, Ecole Normale Superieure Rennes and Seminar Université Avignon, 2015
· *Numerical methods in shape optimization*, Colloque InterActions, Université Grenoble-Alpes, April 2015
· *Numerical method for solving boundary eigenvalue problems*, ANR Optiform, Université Paris Dauphine, 2015
· *Some numerical aspects in spectral partitioning problems*, Workshop on Calculus of Variations, Chambéry, 2015
· *Spectral optimization and fundamental solutions*, Journées EDP Rhône-Alpes-Auvergne, Université Clermont Ferand, 2015
· *Optimal partitions on surfaces - Numerical aspects*, ANR Optiform-Geometrya, Ecole Normale Superieure, Paris 2016
· *Optimization of spectral quantities under perimeter constraint*, Journées Jeunes EDPistes Français, Institut Mathematique de Bordeaux, March 2016
· *Partitions of minimal length on surfaces*, PICOF, Université Grenoble-Alpes, June 2016
· *Spectral optimization on variable domains*, Operator Theory Conference, Timisoara, Romania 2016
· *Optimal partitions for spectral functionals*, Calculus of Variations Seminar, Université Paris 6 Sorbonne, Paris, 2017
· *Regularity of minimizers for an optimization problem under perimeter constraint*, Spectral Theory Group Seminar, University of Orsay, 2017
· *Numerical shape optimization on fixed grids*, Seminar University of Lille, 2017
· *Optimal partitions for spectral functionals*, Seminar University of Poitiers, 2017
· *Parametric representation in shape optimization*, Seminar University of Nancy, 2017
· *Numerical computation of optimal partitions*, Seminar University of Tours, 2017
· *Large Optimal Spectral Partitions*, Conference - SMAI 2017
· *Discrete version of an optimal partitioning problem*, International conference on difference equations and applications, Timisoara, Romania, 2017

- *Automatic conception and optimization of supports in additive manufacturing*, Presentation, Project SOFIA, Ecole Polytechnique, Paris, June 2017
- *Parametric representation in shape optimization*, Seminar, Isaac Newton Institute, University of Cambridge, November 2017
- *Optimization of Supports in Additive Manufacturing*, Seminar, University of Pau, January 2018
- *Optimization of Supports in Additive Manufacturing*, Congres CANUM 2018
- *Optimization of Supports in Additive Manufacturing*, Journees Optimisation de Formes et Applications, University of Pau, June 2018
- *Optimization of Supports in Additive Manufacturing*, European Conference on Computational Mechanics, Glasgow, June 2018
- *Shape optimization using the phase-field method*, Seminar CMAP École Polytechnique, June 2018
- *Efficient algorithms for finding optimal partitions for spectral functionals*, Computational and Data Science seminar, University of Luxembourg, July 2018
- *Parametric shape optimization using the support function*, Rencontres normandes EDP, University of Rouen, France, November 2018
- *Optimizing supports in additive manufacturing*, New trends and challenges in the mathematics of optimal design, Isaac Newton Institute, University of Cambridge, UK, June 2019
- *Optimizing the eigenvalues of the Dirichlet-Laplace operator under perimeter and diameter constraints*, Aspect 19, University of Orsay, France, September 2019
- *Optimization of supports in additive manufacturing*, Séminaire Fabrication Additive Paris-Saclay, Ecole Polytechnique, February 2020
- *Parametric shape optimization using the support function*, Seminaire Parisien d'Optimisation: Institut Henri Poincaré, Paris, February 2020
- *Optimizing supports in additive manufacturing*, Workshop Additive Manufacturing - Arkema Chair at Ecole Polytechnique, November 2020
- *Optimizing the Steklov eigenvalues under various constraints*, Geometric and Computational Spectral Theory, Canadian Mathematical Society Winter Meeting, December 2020
- *Parametric shape optimization in FreeFEM*, FreeFEM Days, December 2020
- *Longest minimal length partitions*, ANR SHAPO Seminar, Online, June 2021
- *On the polygonal Faber-Krahn inequality*, Online workshop on Numerical Methods in Bifurcation Theory - Madrid University, December 2021
- *On the polygonal Faber-Krahn inequality*, ANR SHAPO meeting Autrans, April 2022
- *On the polygonal Faber-Krahn inequality*, Institut Polytechnique de Paris Optim. meeting, April 2022
- *On the polygonal Faber-Krahn inequality*, Spectral Geometry in the Clouds, Online, International Seminar on Spectral Theory, May 2022
- *SFB Seminar*, University of Bonn, May 2022
- *Numerical optimization among convex sets*, Shape optimization, related topics and applications, Roscoff, June 2022
- *On the polygonal Faber-Krahn inequality*, Minisymposium "Geometric Variational Problems and Their Applications", SIAM Annual Meeting, online participation, July 2022
- *Discrete optimal partitioning problems*, International conference on difference equations and applications, Centrale SupElec, France, July 2022
- *Towards a hybrid (theoretical-numerical) proof in shape optimization*, CMAP opening day, September 2022
- *On the polygonal Faber-Krahn inequality*, QuamProcs ANR meeting, Institut Mathematique de Bordeaux, October 2022
- *Shape optimization among convex sets*, seminar Groupe de travail CalVa, University Paris-Cité, Paris, October 2022
- *Shape Optimization: Theory and Numerics*, *Maths en herbe* seminar for 3rd year students, Institut de Hautes Etudes Scientifiques, Bures-sur-Yvette, 2023

- *Accessibility constraints in shape optimization*, ANR SHAPO, Université Paris Sorbonne, 2023
- *Numerical Shape Optimization among Convex sets*, NANMAT 2023 - Tiberiu Popovici Institute, Cluj-Napoca, Romania
- *Accessibility constraints in Shape Optimization*, Materials 4 Science Workshop Ecole Polytechnique, March 2024
- Optimization Seminar University of Avignon, May 2024
- Optimization Seminar University Paris 1 – Pantheon-Sorbonne, May 2024
- *A computer assisted proof in shape optimization*, *Optimizing supports for Additive Manufacturing*, Aurel Vlaicu University, July 2024
- *A computer assisted proof in shape optimization*, NANMAT 2024 - Tiberiu Popovici Institute, Cluj-Napoca, Romania
- *Accessibility constraints in Shape Optimization*, Phase field and mobile interfaces seminar, Ecole Nationale Superieure de Mines de Paris, December 2024

Abilităţi de Calcul ştiinţific

Programare:	Matlab, FreeFEM, Python, Jupyter Notebook, Pari-GP, Julia
Toolbox-uri:	Studiul partiţiilor de lungime minimală ale unui domeniu in 2D/3D (Python, FreeFEM):
	https://github.com/bbogo/LongestShortestPartitions
	Studiul partiţiilor optimale pentru constanta Cheeger (Matlab):
	https://github.com/bbogo/Cheeger_patch
	Optimizare de forme convexe (FreeFEM):
	https://github.com/bbogo/ConvexSets
	Diagrame Blaschke Santalo pentru studiul inegalităţilor optimale (Matlab):
	https://github.com/bbogo/BlaschkeSantalo
	Exemplu de Demonstraţie asistată de calculator în optimizarea formelor folosind aritmetica de intervale (Matlab, Intlab):
	https://github.com/bbogo/PolyaSzego

Distincţii

International Mathematical Competition for University Students: Premiul I 2010; Premiul II 2008, 2009, 2011 (referinţă www.imc-math.org).

Limbi vorbite

Engleză:	Citit, Scris, Vorbit fluent.
Franceză:	Citit, Scris, Vorbit fluent.
Română:	Limba maternă.

Hobby

- Animarea unui blog: probleme matematice, informatice, vulgarizare (approx 370k vizite): http://mathproblems123.wordpress.com
- Project Euler: rezolvare optimală a unor probleme de informatică - Nivelul 13 (> 325 probleme) http://projecteuler.net
- Şah, Pian