

Cristian Barbarosie

Cristian Barbarosie concluded his PhD in Mathematics in 2002 at Universidade de Lisboa Faculdade de Ciências. He is Assistant Professor at Universidade de Lisboa Faculdade de Ciências. He published 20 papers in scientific journals. He received one award. Keywords: Constrained minimization; Worst case design; Minimax problems; Active set strategy; Gradient methods; Optimization; Homogenization; Numerical Analysis; Continuum Mechanics; Inverse problems; Shape optimization; Eigenvalue problems; Linear elasticity; Adjoint method; Computational Solid Mechanics; Optimization of Structures; Linear Elasticity; Stiff Structures.

Identification

Personal identification

Full name

Cristian Barbarosie

Gender

Male

Birth date

1972/01/01

Citation names

Barbarosie, Cristian

Author identifiers

Ciência ID

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Addresses

Faculdade de Ciências da Universidade de Lisboa, Campo Grande, 1749-016 Lisboa, Lisboa, Portugal
(Professional)

Websites

<https://webpages.ciencias.ulisboa.pt/~cabarbarosie> (Professional)

Knowledge fields

Exact Sciences - Mathematics

Languages

Language	Speaking	Reading	Writing	Listening	Peer-review
Romanian (Mother tongue)					
English	Advanced (C1)	Advanced (C1)	Advanced (C1)	Advanced (C1)	Advanced (C1)
Portuguese	Proficiency (C2)	Proficiency (C2)	Proficiency (C2)	Proficiency (C2)	Proficiency (C2)
French	Upper intermediate (B2)	Upper intermediate (B2)	Upper intermediate (B2)	Upper intermediate (B2)	Upper intermediate (B2)

Education

	Degree	Classification
2002 Concluded	Matemática (Doutoramento) Universidade de Lisboa Faculdade de Ciências, Portugal <i>"Análise assintótica e optimização em mecânica dos meios contínuos" (THESIS/DISSERTATION)</i>	aprovado
1997 Concluded	Matemática (Mestrado) Universidade de Lisboa Faculdade de Ciências, Portugal <i>"Optimização de estruturas não periódicas" (THESIS/DISSERTATION)</i>	Muito Bom
1994 Concluded	Matemática (Licenciatura) Universidade de Lisboa Faculdade de Ciências, Portugal	19/20

Affiliation

Teaching in Higher Education

2002 - Current	Assistant Professor (University Teacher) Universidade de Lisboa Faculdade de Ciências, Portugal
1997 - 2002	Assistant (University Teacher) Universidade de Lisboa Faculdade de Ciências, Portugal

1995 - 1997

Trainee Assistant (University Teacher)

Universidade de Lisboa Faculdade de Ciências, Portugal

Projects

Contract

Designation

Funders

2002 - Current

New Materials, Adaptative Systems and their Nonlinearities :
Modeling, Control and Numerical Simulation

HPRN-CT-2002-00284

Researcher

2001 - Current

Stability of quasi-static paths and singular perturbation
problems

POCTI/MAT/40867/2001

Researcher

2019/01/01 - 2019/12/31

UID/MAT/04561/2019

UID/MAT/04561/2019

Researcher

Universidade de Lisboa Centro de Matemática Aplicações
Fundamentais e Investigação Operacional, PortugalFundação para a
Ciência e a
Tecnologia,
Portugal

2015/01/01 - 2018/12/31

UID/MAT/04561/2013

UID/MAT/04561/2013

Researcher

Universidade de Lisboa Centro de Matemática Aplicações
Fundamentais e Investigação Operacional, PortugalFundação para a
Ciência e a
Tecnologia,
Portugal

2013/01/01 - 2014/12/31

PEstOE/MAT/UI0209/2013

PEstOE/MAT/UI0209/2013

Researcher

Universidade de Lisboa Centro de Matemática Aplicações
Fundamentais e Investigação Operacional, PortugalFundação para a
Ciência e a
Tecnologia,
Portugal

2011/01/01 - 2012/12/31

PEst-OE/MAT/UI0209/2011

PEst-OE/MAT/UI0209/2011

Researcher

Universidade de Lisboa Centro de Matemática Aplicações
Fundamentais e Investigação Operacional, PortugalFundação para a
Ciência e a
Tecnologia,
Portugal

2004 - 2007	Análise Assintótica Aplicada à Mecânica dos Meios Contínuos POCI/MAT/60587/2004 Researcher Universidade de Lisboa Centro de Matemática Aplicações Fundamentais e Investigação Operacional, Portugal	Fundação para a Ciência e a Tecnologia, Portugal
2002 - 2004	Métodos numéricos e analíticos na optimização de forma GRICES/CNRS 2003-2004 Researcher	

Outputs

Publications

Book chapter	1	Barbarosie, Cristian; Lopes, Sérgio; Toader, Anca-Maria. "An Algorithm for Constrained Optimization with Applications to the Design of Mechanical Structures". In <i>EngOpt 2018 Proceedings of the 6th International Conference on Engineering Optimization</i> , 272-284. Springer International Publishing, 2019. Published · 10.1007/978-3-319-97773-7_25
	2	Toader, Anca-Maria; Barbarosie, Cristian. "6. Optimization of eigenvalues and eigenmodes by using the adjoint method". In <i>Topological Optimization and Optimal Transport</i> . De Gruyter, 2017. 10.1515/9783110430417-006
Conference paper	1	Barbarosie, Cristian; Lopes, Sérgio; Toader, Anca-Maria. "An algorithm for constrained optimization with applications to the design of mechanical structures". 2018. https://doi.org/10.1007/978-3-319-97773-7_25
	2	Barbarosie, Cristian. "Properties of the cost functional in free material design". Paper presented in <i>EngOpt 2012 - International Conference on Engineering Optimization, Rio de Janeiro</i> , 2012. Published
	3	Barbarosie, Cristian. "Properties of the cost functional in free material design". Paper presented in <i>Congresso de Métodos Numéricos em Engenharia, Coimbra</i> , 2011. Published
	4	Barbarosie, Cristian; A.-M. Toader. "Multi-objective optimization applied to the design of composite materials". Paper presented in <i>Congresso de Métodos Numéricos em Engenharia, Coimbra</i> , 2011. Published
	5	Barbarosie, Cristian; A.-M. Toader; Lopes, Sérgio. "Optimization of a tube bundle immersed in a fluid". Paper presented in <i>2nd International Conference on Engineering Optimization, Lisboa</i> , 2010. Published

- 6 Barbarosie, Cristian. "Optimization of a tube bundle immersed in a fluid". *Paris*, 2010.
Published
- 7 Barbarosie, Cristian. "Numerical approach to the inverse homogenization problem". Paper presented in *International Conference on Differential Equations, Berlim*, 1999.

Journal article

- 1 Barbarosie, Cristian; Toader, Anca-Maria; Lopes, Sérgio. "A gradient-type algorithm for constrained optimization with application to microstructure optimization". *Discrete & Continuous Dynamical Systems - B* 25 5 (2020): 1729-1755. <http://dx.doi.org/10.3934/dcdsb.2019249>.
Published · 10.3934/dcdsb.2019249
- 2 Antunes, P.R.S.; Barbarosie, C.; Toader, A.-M.. "Detection of holes in an elastic body based on eigenvalues and traces of eigenmodes". *Journal of Computational Physics* 333 (2017): 352-368. <http://www.scopus.com/inward/record.url?eid=2-s2.0-85008384541&partnerID=MN8TOARS>.
10.1016/j.jcp.2016.12.044
- 3 Barbarosie, C.; Tortorelli, D.A.; Watts, S.. "On domain symmetry and its use in homogenization". *Computer Methods in Applied Mechanics and Engineering* 320 (2017): 1-45. <http://www.scopus.com/inward/record.url?eid=2-s2.0-85016992040&partnerID=MN8TOARS>.
10.1016/j.cma.2017.01.009
- 4 Barbarosie, Cristian; Toader, Anca-Maria; Lopes, Sérgio. "A gradient-type algorithm for constrained optimization with application to microstructure optimization". *Discrete & Continuous Dynamical Systems - B* 25 5 (2017): 1729-1755. <http://dx.doi.org/10.3934/dcdsb.2019249>.
Published · 10.3934/dcdsb.2019249
- 5 Barbarosie, C.; Toader, A.-M.. "Optimization of bodies with locally periodic microstructure by varying the periodicity pattern". *Networks and Heterogeneous Media* 9 3 (2014): 433-451. <http://www.scopus.com/inward/record.url?eid=2-s2.0-84907709130&partnerID=MN8TOARS>.
10.3934/nhm.2014.9.433
- 6 Barbarosie, C.; Toader, A.-M.. "Optimization of bodies with locally periodic microstructure". *Mechanics of Advanced Materials and Structures* 19 4 (2012): 290-301. <http://www.scopus.com/inward/record.url?eid=2-s2.0-84859717364&partnerID=MN8TOARS>.
10.1080/15376494.2011.642939
- 7 Barbarosie, C.; Lopes, S.. "A generalized notion of compliance". *Comptes Rendus - Mecanique* 339 10 (2011): 641-648. <http://www.scopus.com/inward/record.url?eid=2-s2.0-80053179607&partnerID=MN8TOARS>.
10.1016/j.crme.2011.07.002
- 8 Barbarosie, C.. "Representation of divergence-free vector fields". *Quarterly of Applied Mathematics* 69 2 (2011): 309-316. <http://www.scopus.com/inward/record.url?eid=2-s2.0-79960851186&partnerID=MN8TOARS>.
- 9 Barbarosie, C.; Toader, A.-M.. "Shape and topology optimization for periodic problems: Part II: Optimization algorithm and numerical examples". *Structural and Multidisciplinary Optimization* 40 1-6 (2010): 393-408. <http://www.scopus.com/inward/record.url?eid=2-s2.0-72149099334&partnerID=MN8TOARS>.
10.1007/s00158-009-0377-1

- 10 Barbarosie, C.; Toader, A.-M.. "Shape and topology optimization for periodic problems: Part I: The shape and the topological derivative". *Structural and Multidisciplinary Optimization* 40 1-6 (2010): 381-391. <http://www.scopus.com/inward/record.url?eid=2-s2.0-72149094853&partnerID=MN8TOARS>.
10.1007/s00158-009-0378-0
- 11 Barbarosie, C.; Toader, A.-M.. "Saint-Venant's principle and its connections to shape and topology optimization". *ZAMM Zeitschrift fur Angewandte Mathematik und Mechanik* 88 1 (2008): 23-32. <http://www.scopus.com/inward/record.url?eid=2-s2.0-38849128856&partnerID=MN8TOARS>.
10.1002/zamm.200710357
- 12 Barbarosie, C.; Lopes, S.. "Study of the cost functional for free material design problems". *Numerical Functional Analysis and Optimization* 29 1-2 (2008): 115-125. <http://www.scopus.com/inward/record.url?eid=2-s2.0-40049094872&partnerID=MN8TOARS>.
10.1080/01630560701872540
- 13 Barbarosie, Cristian. "Bounds for periodic mixtures of an infinite number of materials". *GAKUTO Internat. Ser. Math. Sci. Appl.* 24 (2006):
- 14 Barbarosie, C.; Toader, A.-M.. "Bounds for non-periodic mixtures of infinitely many materials". *Mathematical Methods in the Applied Sciences* 28 9 (2005): 1089-1114. <http://www.scopus.com/inward/record.url?eid=2-s2.0-19644365891&partnerID=MN8TOARS>.
10.1002/mma.604
- 15 Barbarosie, C.; Neves, M.M.. "Periodic structures for frequency filtering: Analysis and optimization". *Computers and Structures* 82 17-19 (2004): 1399-1403. <http://www.scopus.com/inward/record.url?eid=2-s2.0-3042784066&partnerID=MN8TOARS>.
10.1016/j.compstruc.2004.03.035
- 16 Barbarosie, C.. "Shape optimization of periodic structures". *Computational Mechanics* 30 3 (2003): 235-246. <http://www.scopus.com/inward/record.url?eid=2-s2.0-0037297324&partnerID=MN8TOARS>.
10.1007/s00466-002-0382-3
- 17 Barbarosie, C.. "Bounds for mixtures of an arbitrary number of materials". *Mathematical Methods in the Applied Sciences* 24 8 (2001): 529-542. <http://www.scopus.com/inward/record.url?eid=2-s2.0-0035946929&partnerID=MN8TOARS>.
10.1002/mma.225
- 18 Barbarosie, C.. "Extension operators". *Mathematische Nachrichten* 218 (2000): 5-17. <http://www.scopus.com/inward/record.url?eid=2-s2.0-0040735647&partnerID=MN8TOARS>.
- 19 Barbarosie, C.. "Optimization of perforated domains through homogenization". *Structural Optimization* 14 4 (1997): 225-231. <http://www.scopus.com/inward/record.url?eid=2-s2.0-0031367160&partnerID=MN8TOARS>.
- 20 Barbaroie, C.. "Reducing the wrapping effect". *Computing* 54 4 (1995): 347-357. <http://www.scopus.com/inward/record.url?eid=2-s2.0-0029221430&partnerID=MN8TOARS>.
10.1007/BF02238232

Thesis /
Dissertation

- 1 Lopes, Sérgio, 1976-. "Theoretical and numerical analysis of optimization problems with applications to continuum mechanics". PhD, 2013. <http://hdl.handle.net/10451/7836>.
- 2 Tiago, Jorge Filipe Duarte. "Existence results and applications for some non-linear optimal control problems". PhD, 2009. http://catalogo.ul.pt/F/?func=item-global&doc_library=ULB01&type=03&doc_number=000572996.

Activities

Committee member

	Activity description Role	Institution / Organization
2020/11 - Current	comissão executiva do Departamento de Matemática Member	Universidade de Lisboa Faculdade de Ciências, Portugal

Distinctions

Other distinction

2002	Programa Gulbenkian de Estímulo à Investigação Fundação Calouste Gulbenkian, Portugal
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