Muamer Kadic

Curriculum Vitae

46 rue des Cras
25000 Besançon, France
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✉ *muamer.kadic@gmail.com*
Citizen: French, born in 1981

Work Experience

Associate Professor

2016-> **Universite de Bourgogne Franche Comte**, *UBFC*, Besancon, France.
Research: Mechanical Metamaterials, Acoustics, Finite Element Calculations, Electromagnetism, Multiphysic Coupling.

Postdoctoral research

2012-2015 **Applied Physics, KIT**, *INT*, Karlsruhe, Germany.
Research: Mechanical Metamaterials (Auxetics, Pentamode, Zero-Poisson's ratio, cloaking, plasticity, viscoelasticity, buckling, instabilities, polymers), Acoustics (Band-structures, Transmission), Finite Element Calculations, Electromagnetism, Transformational Physics, Multiphysic Coupling (Thermal, Electric and Mechanics).

PhD

2008-2011 **Institut Fresnel**, *University of Marseille*, Marseille, France.
Research: Electromagnetism, Plasmonics, Scattering Matrix Calculations, Finite Elements, Cloaking, Lensing, Metamaterial Design.

Internships

2006-2008 **Researcher**, *Trinity College Dublin*, Dublin, Ireland.
General LASER optics and characterization of metallic nanostructures and quantum dots.

2006 **Master thesis**, *MINATECH, CEA*, Grenoble, France.
Electromagnetic simulation and modeling of the evaluation of interconnect performances.

2005 **Bachelor thesis**, *EMIC*, Louvain la Neuve, Belgium.
Characterizations of nanostructures, Measurements, Simulation and Modeling.

Education

2017-2018 **Habilitation**, *Bourgogne Franche-Comté*, FEMTO-ST, CNRS, France.
"Metamaterials and Transformational Physics"

2008-2011 **PhD in Physics**, *Institut Fresnel and Aix-Marseille University*, Marseille, France.
"Metamaterials for surface plasmons"

2001-2006 **Engineering degree**, *National Institute of Applied Sciences of Rennes (INSA)*, Rennes, France.
Materials Science, Nanotechnology

2005-2006 **Business degree**, *ESC Rennes School of Business*, Rennes, France.
Business engineering, Management, Enterprise strategy

Fundings

2014-2016 Postdoctoral Grant for research: 110 000 Euro for two years and 40kEuro for traveling, Hector Fellow Academy, Germany

2016 LABEX ACTION, 20kEuro, France

2017 Equipement Grant, Regional Project Bourgogne Franche-Comté, 230kEuro, France

2017 Junior Professor Fellowship, 180kEuro, BFC-UBFC, France

2018 Regional Equipement Found, 230kEuro + 40KEuro, BFC-UBFC, France

Editorial and Examiner

2015 Editor for the "Journal of Applied and Theoretical Physics" from Verizona (London)

2016 Scientific committee member for the Applied Nanotechnology and Nanoscience International Conference (ANNIC), Barcelona, Spain

2016 Technical Program Committee 4th International Conference on Applied Mechanics, Mechatronics and Intelligent System (AMMIS2016), Beijing, China

2015 Examinator for the thesis of Mrs. Daniela Barros Vega, University of Los Andes, Colombia

2018 Scientific Program Committee of The International Conference on Electronic Engineering and Renewable Energy (ICEERE'2018), Saidia, Marocco

Technical and Academic Skills

Languages-Tools Comsol Multiphysics (Heat transfer, Structural mechanics, RF, Comsol AC-DC), Latex, MATLAB, Maple, Labview, Origin

Expertise Acoustic, Structural Mechanics, Extremal Materials, Wave Propagations, Transformational Optics, Heat Transfert, Electromagnetism, Numerical calculations, Material design.

Publications

2018 [50] **Kadic M**, Frenzel T, and Wegener M, Nature Physics, **14**, 8-9, (2018).

[49] Martin McCall, John B Pendry, Vincenzo Galdi, Yun Lai, SAR Horsley, Jensen Li, Jian Zhu, Rhiannon C Mitchell-Thomas, Oscar Quevedo-Teruel, Philippe Tassin, Vincent Ginis, Enrica Martini, Gabriele Minatti, Stefano Maci, Mahsa Ebrahimpouri, Yang Hao, Paul Kinsler, Jonathan Gratus, Joseph M Lukens, Andrew M Weiner, Ulf Leonhardt, Igor I Smolyaninov, Vera N Smolyaninova, Robert T Thompson, Martin Wegener, **Kadic M**, Steven A Cummer, Journal of Optics, and , Phys. Rev. B, **20**, 1 (2018).

[48] Alaee R, Christensen J and **Kadic M**, Phys. Rev. B, **97**, 195420 (2018).

[47] Alaee R, Christensen J and **Kadic M**, Phys. Rev. Applied, **9**,014007 (2018).

2017 [45] Qu J, Gerber A, Mayer F, **Kadic M** and Wegener M, Phys. Rev. X, **9**, 041060 (2017).

[44] Briane M, **Kadic M**, Kern C, Milton G, Wegener M, and Whyte D, SIAM News, **Dec 01** (2017).

[43] Frenzel T, **Kadic M**, and Wegener M, Science, **358**, 1072-1074 (2017).

[42] Findeisen C, Hohe J, **Kadic M** and Gumbsch P, J. Mech. and Phys. of Solids **110**, 171901 (2017).

[41] Wegener M, **Kadic M** and Kern C, Physics Today. **70**, 14-15 (2017).

[40] Qu J, **Kadic M** and Wegener M, Appl. Phys. Lett. **110**, 171901 (2017).

[39] Kern C, Schuster V, Kadic M and Wegener M. Phys. Rev. Appl. **7**, 044001 (2017).

[38] Qu J, **Kadic M** and Wegener M, Sci. Report **7**, 40643 (2017).

[37] Kern C, **Kadic M** and Wegener M. Phys. Rev. Lett. **118**, 016601 (2017).

2016 [36] Diatta A, **Kadic M**, Wegener M, and Guenneau S, Phys. Rev. B **94**, 100105 (2016).

[35] Alaee R, **Kadic M**, Rockstuhl C, and Passian A, Appl. Phys. Lett. **109**, 141102 (2016).

[34] Frenzel T, Findeisen C, **Kadic M**, Gumbsch P and Wegener M, Tailored buckling micro-lattices as reusable light-weight shock absorbers, Adv. Mater. **28**, 5865 (2016).

[33] Schittny R, Niemeyer A, Mayer F, Naber A, **Kadic M** and Wegener M. Invisibility cloaking in light-scattering media, Laser & Photonics Reviews **10**, 382 (2016).

2015 [32] Christensen J, **Kadic M**, Kraft O and Wegener M. Vibrant times for mechanical metamaterials, MRS Communications **5**, 453-462 (2015).

[31] Schittny R, Niemeyer A, **Kadic M**, Bückmann T, Naber A and Wegener M. Diffuse-light all-solid-state invisibility cloak, Optics Lett. **40** 4202 (2015).

[30] Kern C, **Kadic M** and Wegener M. Parallel Hall effect from three-dimensional single-component metamaterials, Appl. Phys. Lett. **107** 132103 (2015).

[29] **Kadic M**, Schittny R, Bückmann T, Kern C and Wegener M. Hall-Effect Sign Inversion in a Realizable 3D Metamaterial, Phys. Rev. X **5** 021030 (2015).

[28] Bückmann T, **Kadic M**, Schittny R and Wegener M. Mechanical cloak design by direct lattice transformation, Proc. Natl. Acad. Sci. **112** 4930-4934 (2015).

[27] Bückmann T, **Kadic M**, Schittny R and Wegener M. Mechanical metamaterials with anisotropic and negative effective mass density tensor made from one constituent material, Phys. Status Solidi b **252** 1671 (2015).

[26] **Kadic M**, Bückmann T, Schittny R and Wegener M. Experiments on cloaking in optics, thermodynamics and mechanics, Phil. Trans. R. Soc. A. **373** 2049 (2015).

[25] Schittny R, Niemeyer A, **Kadic M**, Bückmann T, Naber A and Wegener M. Transient behavior of invisibility cloaks for diffusive light propagation, Optica **2** 84-87 (2015).

2014 [24] **Kadic M**, Bückmann T, Schittny R, Gumbsch P and Wegener M. Pentamode metamaterials with independently tailored bulk modulus and mass density, Phys. Rev. Appl. **2** 054007 (2014).

[23] Mueller J B, Fischer J, Mayer F, **Kadic M** and Wegener M. Polymerization Kinetics in Three Dimensional Direct Laser Writing, Adv. Matter. **26** 6566-6571 (2014).

[22] **Kadic M**, Dupont G, Guenneau S, Enoch S. Invisible waveguides on metal plates for plasmonic analogs of electromagnetic wormholes, Phys. Rev. A **90** 043812 (2014).

[21] Schittny R, **Kadic M**, Bückmann T and Wegener M. Invisibility cloaking in a diffusive light scattering medium, Science **345** 427-429 (2014).

[20] Bückmann T, Thiel M, **Kadic M**, Schittny R and Wegener M. An elasto-mechanical unfeelability cloak made of pentamode metamaterials, Nat. Commun. **5** 4130 (2014).

[19] Bückmann T, Schittny R, Thiel M, **Kadic M**, Greame W M and Wegener M. On three-dimensional dilational elastic metamaterials, New J. Phys. **16** 033032(2014).

2013 [18] Schittny R, Bückmann T, **Kadic M** and Wegener M. Elastic measurements on macroscopic three-dimensional pentamode metamaterials, Appl. Phys. Lett. **103**, 231905(2013).

[17] **Kadic M**, Bückmann T, Schittny R, and Wegener M. Metamaterials beyond electromagnetism, Rep. Prog. Phys., **76** 126501 (2013).

[16] Hofman M, Scherrer G, **Kadic M**, Melique X, Śmigaj W, Cluzel B, Guenneau S, Lippens D, De Fornel F, and Gralak B and Vanbestien O, J. Dispersion Engineering for Multifunctional Photonic Crystal Based Nanophotonic Devices at Infrared Wavelengths, Nanomed. Nanotechnol. **4**, 1000185 (2013).

[15] Frenzel T, Brehm J D, Bückmann T, Schittny R, **Kadic M** and Wegener M. Three-dimensional labyrinthine acoustic metamaterials, Appl. Phys. Lett. **103**, 061907 (2013).

[14] **Kadic M**, Bückmann T, Schittny R, and Wegener M, New J. Phys. **15**, 023029 (2013).

[13] Schittny R, **Kadic M**, Guenneau S, and Wegener M, Experiments on transformation thermodynamics: molding the flow of heat, Phys. Rev. Lett., **110**, 198002 (2013).

[12] Scherrer G, Hofman M, Śmigaj W, **Kadic M**, Chang TM, Melique X, Lippens D, Vanbestien O, Cluzel B, de Fornel F, Guenneau S and Gralak B, Photonic crystal carpet: Manipulating wave fronts in the near field at 1.55 um, Phys. Rev. B **88**, 1151 (2013).

2012 [11] Martin A, **Kadic M**, Schittny R, Bückmann T, and Wegener, M, Phys. Rev. B **86**, 155116 (2012).

[10] Bückmann T, **Kadic M**, Thiel M, and Wegener M. Werkstoffe **4**, 46 (2012).

[9] **Kadic M**, Bückmann T, Stenger N, Thiel M, and Wegener M. On the practicability of pentamode mechanical metamaterials, Appl. Phys. Lett. **100**, 191901 (2012).

[8] Bückmann T, Stenger N, **Kadic M**, Kaschke J, Frölich J, Kennerknecht T, Eberl C, Thiel M, and Wegener M. Tailored 3D Mechanical Metamaterials Made by Dip in Direct Laser Writing Optical Lithography, Adv. Mater. **24**, 2710 (2012).

[7] **Kadic M**, Sébastien G, Stefan E, Paloma AH , Luis M-M, García-Vidal F J, Renger J, and Quidant R. Transformation plasmonics, Nanoph. **1**,51-64 (2012).

2011 [6] Ramakrishna SA, Mandal P, Jeyadheepan K, Shukla N, Chakrabarti S, **Kadic M**, Enoch S, Guenneau S. Plasmonic interaction of visible light with gold nanoscale checkerboards, Phys Rev B **84**, 245424 (2011).

[5] **Kadic M**, Dupont G, Chang T-M, Guenneau S, Enoch S. Curved trajectories on transformed metal surfaces: Luneburg lens, beam-splitter, invisibility carpet and black hole for surface plasmon polaritons, Photonics Nanostruct. Fundam. Appl. **9**, 302–307 (2011).

[4] **Kadic M**, Dupont G, Guenneau S, Enoch S. Controlling surface plasmon polaritons in transformed coordinates, J. Mod. Opt. **58**, 994–1003 (2011).

[3] **Kadic M**, Guenneau S, Enoch S, Ramakrishna SA. Plasmonic space folding: Focusing surface plasmons via negative refraction in complementary media, ACS Nano **5**, 6819–25 (2011).

2010 [2] **Kadic M**, Guenneau S, Enoch S. From transformational optics to plasmonics, Opt. Express **18**, 12027 (2010).

[1]Renger J, **Kadic M**, Dupont G, Acimovic SS, Guenneau S, Quidant R, Enoch S. Hidden progress: broadband plasmonic invisibility, Opt. Express **18**, 15757–68 (2010).

Chapters in books

2016 [4] **Kadic M**, Schittny R, Buckmann T and Wegener M **Transformation Wave Physics: Electromagnetics, Elastodynamics, and Thermodynamics by Pan Stanford**, Experiments on cloaking in electromagnetism, mechanics, and thermodynamics, in press (2016).

2013 [3] Guenneau S, Farhat M, **Kadic M**, Enoch S and Quidant R **Metamaterials and Wave Control**, Cloaking Liquid Surface Waves and Plasmon Polaritons, 161–191 (2013).

[2] **Kadic M**, Farhat M, Guenneau S, Quidant R and Enoch S, **Acoustic Metamaterials**, Metamaterials for Control of Surface Electromagnetic and Liquid Waves, 267–288 (2013).

2012 [1] **Kadic M**, Guenneau S, **Mathematical Optics: Classical, Quantum, and Imaging Methods**, An Introduction to Mathematics of Transformational Plasmonics, 235 (2012).

Conferences

2018 [24] Keynote, Invited, Metamaterials, ETOPIM, Poland

2018 [23] Oral, Metamaterials 2017, Marseille, France

2016 [22] Oral, Cloaking for Mechanical Waves by Direct Lattice Transformation, Metamaterials 2016, Crete, Greece

[21] Invited, 3D Mechanical and Thermal Metamaterials, Hector Fellow Academy, Berlin, Germany

2015 [20] Invited, 3D Microstructured Metamaterials, Beyond CMOS, Ringberg, Germany

[19] Oral, Hall-Effect Sign-Inversion in a Realizable 3D Metamaterial, Metamaterials 2015, Oxford, UK

[18] Invited, Hall effect sign-inversion and parallel Hall effect in single-constituent 3D metamaterials, Auxetics 2015, Malta

[17] Invited, Design Matter, Amsterdam, Nederlands

2014 [17] Oral, Three-dimensional dilational mechanical metamaterials: A 3D printing challenge, Photonics West 2014, San Francisco, USA

[16] Oral, 3D Optical Invisibility Cloak in the Diffusive-Light Limit, CLEO2014, Saint Diego, USA

[15] Oral, Invisibility cloaking in the diffusive-light limit, SPIE Optics and Photonics 2014, San Diego, USA

[14] Oral, Macroscopic Three-Dimensional Broadband Invisibility Cloak in the Diffusive Regime, Metamaterials 2014, Copenhagen, Denmark

[13] Invited, Scanning dip-in direct laser writing to fabricate an elasto-mechanical cloak made of pentamode metamaterials, Metamaterials 2014, Copenhagen, Denmark

2013 [12] Invited, Three-dimensional mechanical metamaterials made by dip-in direct laser writing, Photonics West 2013, San Francisco, USA

[11] Invited, Anisotropic versions of pentamode structures: Towards transformation elastodynamcis, META2013, Sharjah - Dubai, United Arab Emirates

[10] Oral, Experiments on transformation thermodynamics: Molding th flow of heat, META2013, Sharjah - Dubai, United Arab Emirates

2012 [9] Oral, On the feasibility of pentamode mechanical metamaterials, META2012, Paris, France

[8] Invited, Elastodynamic cloaking, Advanced Problems in Mechanics, St. Petersbourg, Russia

[7] Oral, Transformational Plasmonic, META2012, Paris, France

2011 [6] Oral, Transformational Plasmonic, Polaritons 2011, CIRM, Luminy, France

[5] Oral, Hidden progress: broadband plasmonic invisibility, Nanometa, Seefeld, Austria

2010 [4] Oral, Transformational Plasmonic, PIERS Boston, USA

[3] Transformational optics and plasmonics, Luminy, Marseille, France

2007 [2] Poster, Surface plasmon enhanced Förster resonance energy transfer between the CdTe quantum dots, Summer School, Erice, Italy

2007 [1] Poster, Investigation of Enhancement of CdTe quantum dot light emission through surface plasmon coupling, Galway, Ireland

Languages

Self-assessment European level CEFR (C2 maximum evaluation)

		Comprehension		**Speaking**		**Writing**
		Listening	Reading	Interaction	Production	
French	**Mother Tongue**	*C2*	*C2*	*C2*	*C2*	*C2*
English	**Advanced**	*C2*	*C2*	*C1*	*C1*	*C1*
Yougoslavian	**Mother Tongue**	*C2*	*C2*	*C2*	*C2*	*C2*
German	**Basic**	*B2*	*B1*	*B1*	*B1*	*B1*
Russian	**Basic**	*A2*	*A2*	*A1*	*A2*	*A1*