Souhayl Sadik, PhD, Eng

Curriculum Vitae

Postdoctoral Researcher
Mechanical Metamaterials and Soft Matter Group
Department of Mechanical and Production Engineering,
Aarhus University
Nationality: Moroccan

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Date of birth: 10.07.1987

Research Interests

Mechanical Metamaterials; Soft Materials; Additive Manufacturing; Morphoelasticity; Biomechanics

Disciplines

Solid Mechanics; Continuum Mechanics; Engineering Mechanics; Geometric Mechanics; Nonlinear Elasticity; Anelasticity; Applied Mathematics; Mathematical Modelling; Soft Condensed Matter Physics

Education

Aug 2012 – Dec 2016	**Doctor of Philosophy, Engineering Science and Mechanics** Thesis: "Referential and Spatial Evolutions in Nonlinear Elasticity" Advisor: Professor Arash Yavari College of Engineering, **Georgia Institute of Technology**, Atlanta, GA, USA
Aug 2012 – May 2014	**Master of Science, Mathematics** School of Mathematics, **Georgia Institute of Technology**, Atlanta, GA, USA
Sep 2010 – May 2012	**Master of Engineering, Civil Engineering** **Ecole des Ponts ParisTech** and **Ecole Centrale Paris**, Paris, France
Sep 2007 – Jul 2010	***Diplôme d'Ingénieur**, Civil Engineering* **Ecole Hassania des Travaux Publics**, Casablanca, Morocco
Sep 2005 – Jul 2007	***Classes Préparatoires**, Mathematics, Physics, and Engineering Sciences* **Lycée Mohammed V**, Béni Mellal, and **Lycée Moulay Youssef**, Rabat, Morocco

Professional Experience

Since Aug 2019	**Postdoctoral Researcher** Mechanical Metamaterials and Soft Matter Group Department of Mechanical and Production Engineering, **Aarhus University**, Aarhus, Denmark
Feb 2019 – May 2019	**Dresden Junior Fellow** Institute of Scientific Computing Faculty of Mathematics, **TU Dresden**, Dresden, Germany
Jan 2017 – Jan 2019	**Postdoctoral Research Fellow** Pattern Formation, Energy Landscapes, and Scaling Laws Group **Max Planck Institute for Mathematics in the Sciences**, Leipzig, Germany
Aug 2012 – Dec 2016	***Fulbright** Scholar – Graduate Research Assistant* Geometric Solid Mechanics Group College of Engineering, **Georgia Institute of Technology**, Atlanta, GA, USA
Mar 2010 – May 2012	**Structural Design Engineer**, Dams and Hydroelectric Projects **Tractebel Engineering France**, Paris, France

Teaching Experience

Since Jan 2021	**Instructor**, Department of Mechanical and Production Engineering, **Aarhus University**, Aarhus, Denmark - Mathematical Modelling for Applications in Science and Engineering [graduate]
Aug 2019 – Dec 2020	**Co-instructor**, Department of Engineering, **Aarhus University**, Aarhus, Denmark - Mathematical Modelling for Applications in Science and Engineering (Autumn 2019, Autumn 2020) [graduate]
Aug 2013 – May 2016	**Teaching Assistant**, College of Engineering, **Georgia Institute of Technology**, Atlanta, GA, USA - Mechanics of Deformable Bodies (Fall 2013) [undergraduate] - Structural Analysis (Spring 2014) [undergraduate] - Advanced Strength of Materials (Fall 2014) [graduate] - Advanced Mathematics for Engineers I & II (Fall 2015, Spring 2016) [graduate]
Sep 2009 – Jun 2010	Independent **High School Tutor**, Mathematics, Physics, and Chemistry, Paris, France

Mentoring Experience

Aug 2020 – Jan 2021	Master's thesis co-supervision of Luis Octavio De Cunto on "Buckling and Pattern Formation in Cylindrical Thin Shells", Department of Engineering, Aarhus University, Aarhus, Denmark
	Bachelor's thesis co-supervision of Kristina Hedegaard and Melissa Nielsen on "Bistable Auxetic Mechanical Metamaterials", Aarhus School of Engineering, Aarhus University, Aarhus, Denmark
Aug 2019 – Jun 2020	Master's thesis co-supervision of Alexander Sandfeld Madsen, "A Study of Linear Cut Kirigami on a Liquid Substrate", Department of Engineering, Aarhus University, Aarhus, Denmark
Aug 2014 – Jul 2015	Mentoring of junior PhD student Ashkan Golgoon leading to publication of a peer-reviewed article (item 4 in publication list), College of Engineering, Georgia Institute of Technology, Atlanta, GA, USA

Journal Publications

8. **S. Sadik** & M. A. Dias, On Local Kirigami Mechanics I: Isometric Conical Solutions, *Journal of the Mechanics and Physics of Solids*, 151 (Feb 2021)

7. F. Sozio, M. Faghih Shojaei, **S. Sadik** & A. Yavari, Nonlinear Mechanics of Thermoelastic Accretion, *Zeitschrift für Angewandte Mathematik und Physik*, 71(3) (May 2020)

6. **S. Sadik** & A. Yavari, Small-on-Large Geometric Anelasticity, *Proceedings of the Royal Society A*, 472(2195) (Nov 2016)

5. A. Yavari, A. Ozakin, & **S. Sadik**, Nonlinear Elasticity in a Deforming Ambient Space, *Journal of Nonlinear Science*, 26(6) (Jul 2016)

4. **S. Sadik**, A. Angoshtari, A. Goriely, & A. Yavari, A Geometric Theory of Nonlinear Morphoelastic Shells, *Journal of Nonlinear Science*, 26(4) (May 2016)

3. A. Golgoon, **S. Sadik**, & A. Yavari, Circumferentially-Symmetric Finite Eigenstrains in Incompressible Isotropic Nonlinear Elastic Wedges, *International Journal of Non-Linear Mechanics*, 84 (Apr 2016)

2. **S. Sadik** & A. Yavari, On the Origins of the Idea of the Multiplicative Decomposition of the Deformation Gradient, *Mathematics and Mechanics of Solids*, 22(4) (Oct 2015)

1. **S. Sadik** & A. Yavari, Geometric Nonlinear Thermoelasticity and the Time Evolution of Thermal Stresses, *Mathematics and Mechanics of Solids*, 22(7) (Sep 2015)

Conference & Seminar Presentations

- Invited Talks:
    - A Geometric Theory of Nonlinear Morphoelastic Shells, Applied Mathematics Seminar, **National University of Ireland Galway**, Galway, Ireland, September 2018
    - Nonlinear Elasticity in a Deforming Ambient Space, Institute of Scientific Computing, **Technische Universität Dresden**, Dresden, Germany, November 2017
    - A Geometric Theory of Nonlinear Morphoelastic Shells, Applied Mathematics Seminar, **SUNY Polytechnic Institute,** Utica, NY, USA, April 2016

- Contributed Talks:
    - Mechanics of Kirigami and E-cones, **ASCE Engineering Mechanics Institute International Conference**, the Mechanics of Thin Sheets, from Origami and Kirigami to Creasing and Wrinkling, Virtual Session, April 2020
    - Kirigami Mechanics, **iMAT Student and Postdoc Seminar Meeting**, Aarhus University Centre for Integrated Materials Research, Aarhus, Denmark, November 2019
    - Nonlinear Elasticity on Abstract Manifolds, **Max Planck Institute for Mathematics in the Sciences**, Leipzig, Germany, March 2017
    - Nonlinear Elasticity in a Deforming Ambient Space, Structural Engineering Seminar Series, **Georgia Institute of Technology**, Atlanta, GA, USA, February 2016
    - A Geometric Theory of Nonlinear Morphoelastic Shells, Structural Engineering Seminar Series, **Georgia Institute of Technology**, Atlanta, GA, USA, October 2015
    - Geometric Nonlinear Thermoelasticity, 53rd meeting of the Society for Natural Philosophy, **University of Calgary**, Calgary, AB, Canada, August 2015
    - Geometric Nonlinear Thermoelasticity, Structural Engineering Seminar Series, **Georgia Institute of Technology**, Atlanta, GA, USA, February 2015

- Poster Presentations:
    - A Geometric Theory of Nonlinear Morphoelastic Shells, Workshop on Mathematics of Thin Structures (Modelling, Analysis and Simulation), Faculty of Mathematics, School of Science, **Technische Universität Dresden**, Dresden, Germany, September 2018
    - A Geometric Theory of Nonlinear Morphoelastic Shells, NYU-Oxford Workshop on Mathematical Models of Defects and Patterns, Courant Institute of Mathematical Sciences, **New York University,** New York, NY, USA, January 2016

Academic Service

- Peer-review referee for: Philosophical Transactions of the Royal Society A; Physical Review B; Physical Review E; Journal of Elasticity; Mathematics and Mechanics of Solids; Multiscale Modeling and Simulation; Fatigue & Fracture of Engineering Materials & Structures
- Reporter for Mathematisches Forschungsinstitut Oberwolfach**,** Material Theories Workshop, July 2017
- Host of the Mechanics Journal Club, Department of Mechanical and Production Engineering, Aarhus University, since September 2019
- Co-host of the AU Science Lunch, Department of Engineering, Aarhus University, Spring 2020

Honours and Awards

- **Dresden Junior Fellowship** [€10,450] awarded by **TU Dresden**, February – May 2019
- **Max Planck Society Fellowship** [€52,500] awarded by the **Max Planck Institute for Mathematics in the Sciences**, 2017 – 2018

- **Fulbright Grant** [USD161,964] awarded by the **Bureau of Educational and Cultural Affairs** of the **US Department of State** and the **Moroccan-American Commission for Educational and Cultural Exchange**, 2012 – 2016
- **Oberwolfach Leibniz Travel Grant** awarded by the **Mathematisches Forschungsinstitut Oberwolfach** to attend the **MFO Material Theories Workshop**, July 2017
- **Travel Grant** awarded by the **SUNY Polytechnic Institute** for the SUNY Polytechnic Institute Applied Mathematics Seminar, Utica, NY, USA, April 2016
- **Travel Grant** awarded by the **Courant Institute of Mathematical Sciences, New York University** for the NYU-Oxford Workshop on Mathematical Models of Defects and Patterns, New York City, NY, USA, January 2016
- **Travel Grant** awarded by the **Harbin Institute of Technology** for the HIT Summer School on Pure and Applied Mathematics, Harbin, Heilongjiang, China, July 2015
- **Travel Grant** awarded by the **University of California, San Diego** for the Symposium on New Developments in Defect Mechanics, La Jolla, CA, USA, January 2014
- **Graduate Studies Scholarship** awarded by the **Fondation de l'Ecole des Ponts ParisTech** and the **Fondation de l'Ecole Centrale Paris**, 2010 – 2012
- **Grand Admis**, top 1% in the *Classes Préparatoires aux Grandes Ecoles* National Competitive Examination on **Mathematics, Physics, and Engineering Sciences**, Morocco, June 2007

Languages

Arabic:	Native proficiency	Spanish:	Advanced proficiency
French:	Bilingual proficiency	German:	Intermediate proficiency
English:	Bilingual proficiency	Danish:	Novice proficiency