BABAK MABOUDI AFKHAM

PERSONAL INFORMATION

Born on 22 March 1989

Nationality Iranian

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phone (M) +41 78 627 46 97

INTERESTS

Research Fast Numerical Solutions for Parametric Partial Differential Equations, via Model Order Reduction. Developing Structure-Preserving Model-Reduction Techniques for Hyperbolic Problems.

Applied Mathematics Model Order Reduction, Approximation Theory, Uncertainty Quantification, Inverse Problems, Machine Learning.

Pure Mathematics Differential Geometry, Symplectic Geometry, Statistics.

Computer Science Distributed and Parallel systems.

EDUCATION

2014-present Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne-Switzerland

Ph.D. in Computational Mathematics and Simulation Science
Advisor: Prof. Jan S. Hesthaven
Research topic: Structure-Preserving Model-Reduction

2017-2018 Massachusetts Institute of Technology (MIT), Cambridge-United States of America

Exchange Graduate Student in Aeronautics and Astronautics
Advisor: Prof. Karen Willcox
Research topic: Energy-Preserving Model-Reduction for Euler's Equation

2012-2014 Royal Institute of Technology (KTH), Stockholm-Sweden

M.Sc. in Scientific Computing
Advisor: Prof. Anna-Karin Tornberg
Thesis topic: Simulation of elastic rods with intrinsic curvature and twist immersed in fluid

2007-2012 Sharif University of Technology (SUT), Tehran-Iran

B.Sc. in Theoretical Mathematics
Advisor: Prof. Mohammad Reza Razvan
Thesis topic: Learning Spectral Clustering

AWARDS

2017 The SNSF Doc.Mobility grant, 2017.

2014 The SMC (Stockholm Mathematics Center) award for excellent master thesis, 2014.

2013 KTH scholarship and tuition fee waiver, 2013.

PUBLICATIONS

2018 Babak Maboudi Afkham, Jan S. Hesthaven, "Structure-Preserving Model-Reduction of Dissipative Hamiltonian System", Journal of Scientific Computing (2018): 1-19

2017 Babak Maboudi Afkham, Jan S. Hesthaven, "Structure-Preserving Model-Reduction of Parametric Hamiltonian System", SIAM Journal on Scientific Computing 39.6 (2017): A2616-A2644

2018 Babak Maboudi Afkham, Ashish Bhatt, Bernard Haasdonk, Jan S. Hesthaven, "Symplectic Model Reduction with a Weighted Inner Product", Submitted to SIAM Journal on Scientific Computing

2018 Babak Maboudi Afkham, Karen Willcox, Jan Hesthaven, "Energy Preserving Model Reduction of Fluid Flows" - Under Preparation

TEACHING AND SUPERVISION

2014-2017 Principal Teacher Assistant of Analysis I and II: Holding 8 hours of lecture, Holding Exercise classes,Designing weekly exercise sheets

2017 Co-supervisor of the master thesis: "Energy preserving model reduction of fluid dynamics", Nicolo Ripamonti

2015 Supervisor of the semester project: "Hamiltonian formulation for non-conservative systems", Bozorgmehr Aminian

INVITED TALKS AT INTERNATIONAL CONFERENCES AND WORKSHOPS

2018 MoRePaS 2018 Conference - Nantes, France
Keynote: "Model Order Reduction While Preserving a First Integral"

2016 MORCIP - Workshop on Model Order Reduction for Control & Inverse Problems, EPFL
Invited Speaker: "Structure-Preserving Model Reduction of Hamiltonian Systems"

2016 ALOP - Workshop on Reduced Order Models in Optimization, The University of Trier
Invited Speaker: "Structure-Preserving Model Reduction of Hamiltonian Systems"

SCHOOLS AND WORKSHOPS

2016 Winter School on Uncertainty Quantification, University of Basel, Switzerland

2015 Bayesian Methods for Inverse Problems, University of Warwick, Uk.

2015 International School on Model Reduction for Dynamical Control Systems, Dubrovnik, Croatia.

2013 PDC Summer School: Introduction to High-Performance Computing, KTH, Stockholm, Sweden.

LANGUAGES

English (Professional working proficiency), Persian (Mother Tongue), French (Intermediate Proficiency)

HOBBIES

Rock-climbing, Mountaineering (Mount Kilimanjaro 5895m, Mount Damavand 5678m), Distance Running

REFERENCES

Prof. Jan S. Hesthaven
Ecole Polytechnique Fédérale de Lausanne (EPFL)

Prof. Bernard Haasdonk
University of Stuttgart

March 27, 2018