Dr. Dominique P. Zosso   Curriculum Vitae

Assistant Professor of Applied Mathematics, Montana State University

Contact Information

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Education

11/11/2011   **École Polytechnique Fédérale de Lausanne (EPFL), Switzerland**.
              Ph.D. Electrical and Electronics Engineering (Dr. ès sciences)
              Thesis: *Geodesic Active Fields: A Geometric Framework for Image Registration*
              Advisor: Jean-Philippe Thiran

04/01/2006   **École Polytechnique Fédérale de Lausanne (EPFL), Switzerland**.
              M.Sc. Electrical and Electronics Engineering (Ing. él. dipl. EPF)
              Thesis: *An Approach to Multimodal Image Segmentation*
              Advisors: Jean-Philippe Thiran, Benoît Macq (UC Louvain)

Employment and Appointments

08/2016 -   **Assistant Professor**
                   Department of Mathematical Sciences, Montana State University, Bozeman, MT, USA.

07/2013 - 06/2016 **CAM Assistant Adjunct Professor** (non tenure track)
                   Department of Mathematics, University of California, Los Angeles (UCLA), USA.

04/2012 - 09/2014 **SNSF Postdoctoral Fellow**
                   Department of Mathematics, University of California, Los Angeles (UCLA), USA.
                   Sponsor: Luminita Vese.

02/2007 - 02/2012 **Research & Teaching Assistant**
                   École Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

05/2006 - 01/2007 **Research Assistant / Intern**
                   Structural Bioinformatics Group and Swiss Institute of Bioinformatics (SIB),
                   Biozentrum University of Basel, Switzerland.

Research Interests

Mathematical problems at the cutting-edge frontier of image and data understanding, typically formulated as variational models, and the development of efficient algorithms for the numerical solution of these models and related PDE.
Keywords: Variational methods, numerical PDE and PDE on graphs, convex optimization, mathematical imaging, data science, machine learning, and minimal surfaces.

Publications

About **30 peer reviewed research papers** published in journals and conference proceedings.
See separate full list of publications.

Awards and Honors

05/2013	Nominated for UCLA "Chancellor's Award for Postdoctoral Research, 2013"
11/2011	Nominated for Chorafas Foundation Ph.D. thesis award
04/2006	Chavannes Municipality Award ("Prix de la Commune de Chavannes")
08/2001	Meyer Award for scientific excellence ("Meyer-Preis")
08/2001	Award of the High School Association ("Preis des Gymervereins")

Grants and Fellowships

07/2017 - 12/2017	*Graph-based geometrical data analysis* ($ 5k) Montana State University, Faculty Excellence Grants Program.
07/2017	*Titan Xp GPU* for research on graph-based geometrical data analysis (equiv. $ 1.2k) NVIDIA Academic GPU grant program.
07/2016 - 06/2019	*Beltrami on Graphs: Image Segmentation and Data Clustering with Minimal Surfaces* (CHF 424k) Swiss National Science Foundation (SNF), PZ00P2-161378. — declined in favor of TT position
08/2014 - 07/2016	*Geometric methods for graph partitioning* (with Braxton Osting, $ 79k) National Science Foundation, Division of Mathematical Sciences, NSF-DMS-1418812.
01/2015 - 06/2015	*Machine Learning and Big Data* (with Andrea Bertozzi, $ 22k) UCLA Office of Instructional Development, OID-IIP Major Grant award #13-34.
10/2013 - 09/2014	Fellowship "*Advanced Postdoc.Mobility*" (continuation of PostDoc at UCLA, $ 50k) Swiss National Science Foundation (SNF), P300P2-147778.
04/2012 - 09/2013	Fellowship "*for prospective researchers*" (PostDoc at UCLA, $ 100k) Swiss National Science Foundation (SNF), PBELP2-137727.
02/2007 - 11/2011	Ph.D. student fellowship (CHF 150k) National Competence Center in Biomedical Imaging (NCCBI).

Conference and Seminar Talks

12/2017	SIAM Analysis of Partial Differential Equations, Baltimore, MD, USA.
09/2017	SIAM Central States Section Meeting, Fort Collins, CO, USA.
02/2017	SIAM Conference on Computational Science and Engineering, Atlanta, GA, USA.
12/2016	Mathematics colloquium, Montana State University, Bozeman, MT, USA.
10/2016	Applied Mathematics colloquium, Montana State University, Bozeman, MT, USA.
09/2016	SIAM Central States Section Meeting, Little Rock, AR, USA.
05/2016	SIAM Conference on Imaging Science, Albuquerque, NM, USA. (2 talks)
04/2016	Applied Mathematics colloquium, Montana State University, Bozeman, MT, USA.
01/2016	Mathematics colloquium, North Carolina State University, Raleigh, NC, USA.
01/2016	Applied Mathematics colloquium, University of Washington, Seattle, WA, USA.
01/2016	Mathematics colloquium, Montana State University, Bozeman, MT, USA.
01/2016	Joint Mathematics Meetings, Seattle, WA, USA. (2 talks)
12/2015	Mathematics colloquium, Syracuse University, Syracuse, NY, USA.
12/2015	Mathematics colloquium, University of Iowa, Iowa City, IA, USA.
11/2015	IEEE Int. Conf. Data Mining, Atlantic City, NJ, USA.

Conference and Seminar Talks (continued)

09/2015	Institute of Pure and Applied Mathematics, UCLA, Los Angeles, CA, USA.
07/2015	Applied Mathematics Colloquium, UCLA, Los Angeles, CA, USA.
06/2015	École Polytechnique Fédérale de Lausanne, EPFL, Lausanne, Switzerland.
06/2015	Swiss National Science Foundation, Bern, Switzerland.
03/2015	SIAM Conference on Computational Science and Engineering, Salt Lake City, UT, USA.
11/2014	Undergraduate Mathematics Students Association, UCLA, Los Angeles, CA, USA.
10/2014	California State University, Long Beach, CSULB, Long Beach, CA, USA.
09/2014	Institute of Pure and Applied Mathematics, UCLA, Los Angeles, CA, USA.
08/2014	Key-note speaker at the NCCBI annual meeting, EPFL, Lausanne, Switzerland.
02/2014	Undergraduate Mathematics Students Association, UCLA, Los Angeles, CA, USA.
02/2014	ICERM Research Cluster: Geometric analysis methods for graph algorithms Brown University, Providence, RI, USA.
12/2013	California NanoSystems Institute, UCLA, Los Angeles, CA, USA.
05/2013	Institute of Pure and Applied Mathematics, UCLA, Los Angeles, CA, USA.
02/2013	IS&T/SPIE Electronic Imaging: Computational Imaging XI, San Francisco, CA, USA.
09/2012	Institute of Pure and Applied Mathematics, UCLA, Los Angeles, CA, USA.
06/2012	Computational and Applied Mathematics, UCLA, Los Angeles, CA, USA.
05/2012	SIAM Conference on Imaging Science, Philadelphia, PA, USA.
11/2011	Public Ph.D. Thesis Defense, EPFL, Lausanne, Switzerland
11/2010	NCCBI Meeting, EPFL, Lausanne, Switzerland
09/2010	Int. Conference on Numerical Analysis and Applied Mathematics, Rhodos, Greece
09/2010	IM2 Summer Institute, Saanenmöser, Switzerland
07/2010	Math Department, UCLA, Los Angeles, CA, USA
07/2010	Radiology Department, Children's Hospital, Boston, MA, USA
07/2010	Martinos Center for Biomedical Imaging, Boston, MA, USA
02/2008	SPIE Medical Imaging, San Diego, CA, USA
06/2007	IEEE Int. Symposium on Computer-Based Medical Systems, Maribor, Slovenia
04/2007	Healthgrid conference, Geneva, Switzerland
09/2006	European Signal Processing Conference, Florence, Italy

Teaching and Mentoring

MSU (Instructor of record):

2018 Spring	Mathematics of Machine Learning (graduate course)
2018 Spring 2017 Spring	Introduction to Linear Algebra (lower division undergraduate)
2017 Spring	Mathematical Imaging (graduate topics course)
2017 Fall 2016 Fall	Numerical Linear Algebra and Optimization (upper division undergraduate)

UCLA (Instructor of record):

2016 Spring 2015 Spring	Machine Learning (upper division undergraduate, newly created course)
2015 Fall 2014 Fall 2014 Winter	Mathematical Imaging (upper division undergraduate)

EPFL (TA, guest lectures):

2007 - 2011	Image Processing I & II (Master level)
2011	Introduction to Digital Signal Processing (Bachelor level)
2010	Advanced Image Processing and Analysis (Doctoral level)

Advising:

2017 -	Adam Wilander, MSU Ph.D. student (committee member)
2017 -	Michael Gengler, MSU MS student (advisor)
2017 -	Catherine Potts, MSU Ph.D. student (advisor)

Research Experience for Undergraduates (REU) mentoring:

2017 Summer	Carrington Metts, College of William & Mary
2014 Summer	Students: Morgan Weiss (CSULB), James Stevick (Claremont McKenna), Nicholas Takaki (Carnegie Mellon), Jing An (UCLA)
2013 Summer	Students: Daniel Lander (Pepperdine), Dan Zhou (Caltech), Rodrigo A. Rios (UCLA), Matthew Vollmer (UC Davis) Poster won *Outstanding Presentation* award at the 2014 Joint Math Meetings.

Individual student research mentoring:

2016	Sneha Belkhale, UCLA undergraduate student
2014 - 2016	Qianyi Yu, UCLA undergraduate student
2014 - 2015	Jing An, UCLA undergraduate student (now Stanford ICME Ph.D. program)
2014 - 2015	Mengqi Xia, UCLA undergraduate student (now Cornell CS Ph.D. program)
2013	Aurélien Bustin, Master student Univ. Orléans (now PostDoc at King's College)
2012 - 2013	Giang Tran, UCLA Ph.D. student (now PostDoc at UT Austin)
2012 - 2015	Konstantin Dragomiretskiy, UCLA Ph.D. student (now at Morgan Stanley)
2012 - 2015	Oscar Esteban, UPM Ph.D. student (now PostDoc at Stanford)
2012	Carlos Ciller, EPFL Master project
2011 - 2012	Shima Sepehri, EPFL Ph.D. student
2008	Damien Ferrario, EPFL Master project

Professional activities

Conference organization:

05/2016	Minisymposium co-organizer on "Spectral Methods for Nonlocal Diffusion and Segmentation," SIAM Conference on Imaging Science, Albuquerque, NM, USA.
09/2015	Area chair "PDE based processing of images & video," 2015 IEEE International Conference on Image Processing (ICIP 2015), Quebec City, Canada.

03/2015	Minisymposium co-organizer on "Geometric graph partitioning," SIAM Conference on Computational Science and Engineering, Salt Lake City, UT, USA.
05/2012	Minisymposium co-organizer on "The Beltrami Framework and its Applications," SIAM Conference on Imaging Science, Philadelphia, PA, USA.

Reviewer for:

Journals	Discrete and Continuous Dynamical System - B, Inverse Problems and Imaging, PLOS One, Journal of Scientific Computing, Journal of Computational Physics, SIAM Journal on Imaging Sciences, Int. Journal of Computer Vision, IEEE Transactions on Image Processing, Signal Processing, Computer Vision and Image Understanding, Journal of Electronic Imaging, IEEE Signal Processing Letters, IEEE Transactions on Biomedical Engineering, IEEE Journal of Display Technology, Optical Engineering, EURASIP Journal on Image and Video Processing, Remote Sensing Letters, Mechanical Systems and Signal Processing.
Conferences	IEEE Int. Conference on Image Processing (ICIP), IEEE Int. Symposium on Biomedical Imaging (ISBI), IEEE Engineering in Medicine and Biology Conference (EMBC), Medical Image Computing and Computer Assisted Intervention (MICCAI).

Professional Memberships:

2015 -	AMS American Mathematical Society
2012 -	SIAM Society for Industrial and Applied Mathematics, SIAG on Imaging Science
2008 -	SPIE International Society for Optics and Photonics
2006 -	IEEE Institute of Electrical and Electronics Engineers, Signal Processing Society

Service to University:

2017	Participation at MSU Freshman Research Symposium
2017	MSU Mathematics Undergraduate Curriculum Working Group
2017 -	MSU Applied Mathematics Seminar
2003 - 2011	EPFL Electrical Engineering Department promotion (presentations & demonstrations)
2002 - 2006	Student delegate to EPFL Electrical Engineering Department Committee
2003 - 2005	Student delegate to EPFL School of Engineering Committee
2002 - 2006	EPFL Electrical Engineering class representative

Transferable and Other Skills

Programming and modeling languages: C/C++, Matlab, Java, Pascal, Perl, PHP, mySQL.

Languages: Fully proficient in English, German, French.