

ANDREW GIULIANI

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EDUCATION

- Ph.D.* 2013–2018 University of Waterloo, Canada
Applied mathematics · Research interests: High order finite element methods, discontinuous Galerkin. GPU parallelization. Mesh adaptation on GPUs. Limiters on unstructured meshes. Quadrilateral mesh generation.
Supervisor: Dr. Lilia KRIVODONOVA
- Master's* 2013 L'Institut National des Sciences Appliquées de Lyon, France
Mechanical engineering · Laboratoire de Mécanique des Contacts et des Structures (LaMCoS)
Description: Molecular dynamics study of nano-scale phenomena of ionic liquids in lubricated contacts.
Supervisor: Dr. Nicolas FILLOT
- Bachelor's* 2008–2013 L'Institut National des Sciences Appliquées de Lyon, France
Mechanical engineering · Génie Mécanique et Développement (GMD).

RESEARCH EXPERIENCE

2018 - present Assistant Professor/Courant Instructor, Courant Institute, USA

TEACHING EXPERIENCE

- 2018 Instructor, Courant Institute, NYU, USA
Numerical Analysis – Fall
- 2016 Instructor, University of Waterloo, Canada
Calculus I for Honors Mathematics – Fall
- 2014 Teaching Assistantship, University of Waterloo, Canada
Ordinary Differential Equations II – Fall
Math for Engineers – Summer

REFEREED PUBLICATIONS

1. **A. Giuliani**, L. Krivodonova. *A moment limiter for the discontinuous Galerkin method on unstructured triangular meshes*. SIAM Journal on Scientific Computing. To appear.
2. **A. Giuliani**, L. Krivodonova. *Adaptive mesh refinement on graphics processing units for applications in gas dynamics*. Journal of Computational Physics, 381 (2019), pp. 67-90.
3. **A. Giuliani**, L. Krivodonova. *On the optimal CFL number of SSP methods for hyperbolic problems*. Applied Numerical Mathematics, 135 (2019), pp. 165-172.
4. **A. Giuliani**, L. Krivodonova. *Analysis of slope limiters on unstructured triangular meshes*. Journal of Computational Physics, 374 (2018), pp. 1–26.
5. J. Resch, **A. Giuliani**, L. Krivodonova, J. Vanderkooy. *Axisymmetric simulations of nonlinear sound propagation in a trumpet*. Recent Advances in Mathematical and Statistical Methods, Springer, (2018), pp. 229-238.
6. **A. Giuliani**, L. Krivodonova. *Face coloring in unstructured CFD codes*. Parallel Computing, 63 (2017), pp. 17-37.
7. **A. Giuliani**, L. Krivodonova. *An h-adaptive implementation of the discontinuous Galerkin method for nonlinear hyperbolic conservation laws on unstructured meshes for graphics processing units*. Mathematical and Computational Approaches in Advancing Modern Science and Engineering, Springer, (2016), pp. 435-445.

8. N. Voeltzel, **A. Giuliani**, N. Fillot, P. Verge and L. Joly. *Nanolubrication by ionic liquids: molecular dynamics simulations reveal an anomalous effective rheology*. *Physical Chemistry Chemical Physics*, 17 (2015), pp. 23226-23235.
9. M. Fuhry, **A. Giuliani** and L. Krivodonova. *Discontinuous Galerkin methods on graphics processing units for nonlinear hyperbolic conservation laws*. *International Journal for Numerical Methods in Fluids*, 76 (2014), pp. 982-1003.

SUBMITTED MANUSCRIPTS

1. **A. Giuliani**, L. Krivodonova. *A moment limiter for the discontinuous Galerkin method on unstructured tetrahedral meshes*.
2. **A. Giuliani**, L. Krivodonova. *Fast unstructured quadrilateral mesh generation*.
3. K. Dutt, **A. Giuliani**, L. Krivodonova. *An angular momentum conserving moment limiter for the discontinuous Galerkin method on unstructured triangular meshes*.

SCHOLARSHIPS

2015-2017 · NSERC Alexander Graham Bell Canada Graduate Scholarship - Doctoral, \$105,000.
 2013-2017 · University of Waterloo — President's scholarship, \$50,000
 2014-2015 · NSERC Alexander Graham Bell Canada Graduate Scholarship - Masters, \$17,500
 2013-2014 · Ontario Graduate Scholarship, \$15,000

AWARDS

2018 · University of Waterloo — Applied Mathematics Doctoral Award
 2015 · University of Waterloo — Applied Mathematics Outstanding TA Award

INVITED TALKS AND CONFERENCES

2018 · **A. Giuliani**. Moment Limiters for the discontinuous Galerkin method on unstructured meshes. Mid-atlantic numerical analysis day, Temple University.

2018 · **A. Giuliani**. Moment Limiters for the discontinuous Galerkin method on unstructured meshes. Numerical Analysis and Scientific Computing (NASC) Seminar, Courant Institute, New York University.

2018 · **A. Giuliani**. Adaptive mesh refinement for applications in gas dynamics. Talk at the Research Training Group in Mathematical Modeling and Simulation, Courant Institute, New York University.

2018 · **A. Giuliani**. The discontinuous Galerkin method for hyperbolic conservation laws on graphics processing units. Invited talk at the Institute for Computational Engineering and Sciences (ICES) at the University of Texas at Austin.

2018 · **A. Giuliani**. Adaptive, parallel, shock-capturing methods for hyperbolic PDEs on unstructured meshes. Invited talk at the Center for Computational Mathematics and Applications (CCMA) at the Pennsylvania State University.

2017 · **A. Giuliani**, L. Krivodonova. An L-infinity preserving limiter for the discontinuous Galerkin method on unstructured triangular grids. Presentation at the Applied Mathematics, Modeling and Computational Science (AMMCS) Conference, Waterloo, Canada.

2015 · **A. Giuliani**, L. Krivodonova. An h-adaptive implementation of the discontinuous Galerkin method for nonlinear hyperbolic conservation laws on unstructured meshes for graphics processing units. Presentation and article at the Computational Fluid Dynamics Society of Canada conference (CFDSC 2015), Waterloo, Canada.

ADDITIONAL INFORMATION

*Programming
Skills*

C/C++ · CUDA · PYTHON · JAVA · MATLAB

Languages ENGLISH · FRENCH

Citizenship Canadian