DÉLIBÉRATION

de la Commission de la Recherche de l'Université Bretagne-Sud

Séance du 28 septembre 2023

Délibération n°27-2023 : Soutien aux activités de recherche & d'innovation des laboratoires au titre du « programme Professeurs invités », campagne 2023.

LA COMMISSION DE LA RECHERCHE

Vu la répartition du budget 2023 « secteur de la recherche » approuvée en commission de la recherche du 17 novembre 2022 ;

Vu la délibération du Conseil d'Administration n°128/2016 ;

Vu l'avis favorable de la demande de séjour du laboratoire IRDL au titre du « programme Professeurs invités » en réunion des directrices-directeurs de laboratoires du 21 septembre 2023 ;

APRÈS EN AVOIR DÉLIBÉRÉ,

Approuve la demande de soutien aux activités de recherche & d'innovation des laboratoires au titre du « programme Professeurs invités » campagne 2023 - émanant de Juliette COMBESCURE du laboratoire IRDL concernant Ryan ELLIOTT des États-Unis pour la période prévisionnelle du 18 au 21 septembre 2023 - dans la limite de 7 jours.

Membres en exercice : 27
Membres présents : 14
Membres représentés : 9

Suffrages exprimés : 22
- Pour : 22
- Contre : 0

Abstentions : 1
Ne prend pas part au vote : 0

Visa de la Présidente

Signé électroniquement par : Virginie Dupont
Date de signature : 03/10/2023
Qualité : La Présidente

UNIVERSITÉ BRETAGNE SUD
Virginie DUPONT Présidente

Virginie DUPONT

Documents en annexe :

- Le projet de collaboration du laboratoire IRDL avec courriers et CV en appui ;
- La délibération du Conseil d'Administration n°128/2016

Document transmis au Recteur, Chancelier des universités, le …

UNIVERSITY OF MINNESOTA

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July 19, 2023

Dear Professor Christelle Combescure:

With this letter I would like to document our common research interests and my intent to collaborate with you in these areas.

My expertise is in the area of stability and bifurcation of structures and solid materials systems. I have applied this expertise to both continuum and discrete systems at many length- and time-scales. My work ranges from the study of Martensitic phase transformation at the level of individual atoms to the simulation of the formation of creases and kinks in human-scale systems such as biological tissues and rail-road tracks. I have a particular interest in systems which possess a large degree of symmetry where the advanced applied mathematics techniques of Group Theory and Equivariant Bifurcation Theory are necessary. I have applied these techniques in much of my work, but they are most applicable in the rapidly emerging and expanding field of Architected Materials.

It is this last topic where we have previously intersected and where our research interests continue to overlap. I have been impressed with the work you and your students have been performing on the identification of buckling patterns in Architected Materials. I look forward to discussing this further and to developing an extended collaboration between our research groups on this and other adjacent topics of current engineering and science interest. I believe this would most readily be facilitated through a series of mutual visits and exchanges between our groups.

Sincerely,

Ryan S. Elliott, Ph.D.
Professor & Director of Graduate Studies
Direct Phone: (612) 624-2376
Email: relliott@umn.edu
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OpenPGP Public key: https://z.umn.edu/relliott_asc (576D4997C4D51D92)

Ryan S. Elliott

ORCID iD: 0000-0003-4988-8306
March 20, 2023
The University of Minnesota, Department of Aerospace Engineering and Mechanics
107 Akerman Hall, 110 Union Street S. E.
Minneapolis, MN 55455
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Employment

Professor May 2018—Present
University of Minnesota, Aerospace Engineering and Mechanics

Associate Professor May 2011—May 2018
University of Minnesota, Aerospace Engineering and Mechanics

Visiting Researcher 6/'19, 6/'17, 8/'15, 9/'14, 8/'12, Aug.—Dec. 2010
Ecole Polytechnique, Laboratorie de Mecanique des Solides (LMS)

Graduate Faculty Member May 2012—Present
University of Minnesota, Civil, Environmental, and Geo-Engineering

Graduate Faculty Member Jan. 2015—2017
University of Minnesota, Scientific Computing

Assistant Professor Jan. 2005—May 2011
University of Minnesota, Aerospace Engineering and Mechanics

Postdoctoral Research Fellow Sep. 2004—Dec. 2004
University of Michigan, Aerospace Engineering

DOE CSGF Research Assistant (Practicum) May. 2001—Aug. 2001
Los Alamos National Laboratory, Condensed Matter and Statistical Physics (T-11)

Graduate Student Research Assistant Sep. 1988—Sep. 2004
University of Michigan, Aerospace Engineering

Education

Ph.D., Aerospace Engineering & Scientific Computing Dec. 2004
University of Michigan, Aerospace Engineering, Ann Arbor, MI

M.S., Mathematics Dec. 2002
University of Michigan, Mathematics, Ann Arbor, MI

M.S.E., Aerospace Engineering Dec. 1999
University of Michigan, Aerospace Engineering, Ann Arbor, MI

B.S., Engineering Mechanics Dec. 1998
Michigan State University, Materials Science and Mechanics, East Lansing, MI

Honors and Awards

External

Fellow of the American Society of Mechanical Engineers (ASME) 2017
American Society of Mechanical Engineers (ASME)

Thomas J.R. Hughes Young Investigator Award 2014
Applied Mechanics Division (AMD), American Society of Mechanical Engineers (ASME)

NSF CAREER grant 2007—2012
National Science Foundation

Frederick A. Howes Scholar in Computational Science 2005
Department of Energy, United States of America

Ivor K. McIvor Award in Applied Mechanics 2004
University of Michigan

Computational Science Graduate Fellowship (CSGF) 2000—2004
Department of Energy, United States of America

Tau Beta Pi Matthews Fellow 1998—1999
Tau Beta Pi National Engineering Honor Society

University of Minnesota

Russell J. Penrose Faculty Fellowship 2012—2015
Aerospace Engineering and Mechanics, University of Minnesota

McKnight Land-Grant Professorship 2009—2011
University of Minnesota

Current Areas of Research

Multifunctional Design of Architected Materials: Bifurcation and stability of periodic solids and structures using equivariant bifurcation theory; Design of multi-state periodic structures; Folding and creasing in nonlinear elastomers; Pattern formation; High-performance algorithms for numerical continuation of equivariant equations;

Molecular Simulation Infrastructure for Accelerating Materials Research: Software engineering for molecular simulation codes; Cyberinfrastructures supporting the Materials Research community; Algorithms for efficient molecular simulation; Transferability of interatomic potentials; Equilibrium Map methods for stochastic nano-scale structures; Temporal acceleration using Equilibrium Maps;

Biological Tissue Growth and Remodeling Simulation: Continuum mechanics mixture models for biological growth and remodeling; Definitions of stability for biological growth models; Applications to aneurysms, tumor growth, and pulmonary disease;

Books and Book Chapters

1. Ellad B. Tadmor, Ronald E. Miller, Ryan S. Elliott. *Continuum Mechanics and Thermodynamics: From Fundamental Concepts to Governing Equations*. Cambridge University Press, 2012

2. John A. Shaw, Ryan S. Elliott. *Encyclopedia of Aerospace Engineering*, chapter Variational Principles in Structural Mechanics. John Wiley & Sons, Ltd, December 2010. ISBN 9780470686652. http://dx.doi.org/10.1002/9780470686652.eae139

Refereed Journal Papers

1. Wen, G., Ravi-Chandar, K., Elliott, R.S. *et al.* Stability and Localization of Deformation Delay in Finitely Strained Plates at Arbitrary Strain-Rates. *J Elast* (2022). https://doi.org/10.1007/s10659-022-09962-9

2. Andrew Akerson, Ryan S. Elliott. “Stability and post-bifurcation of film-substrate systems.” Proceed- ings of the Royal Society of London Series A-Mathematical and Physical Sciences, 478(2264):20220,181, 2022. https://doi.org/10.1098/rspa.2022.0181

3. Yonatan Kurniawan, Cody L. Petrie, Kinamo J. Williams, Mark K. Transtrum, Ellad B. Tadmor, Ryan S. Elliott, Daniel S. Karls, Mingjian Wen. “Bayesian, frequentist, and information geometric approaches to parametric uncertainty quantification of classical empirical interatomic potentials.” Journal of Chemical Physics, 156(21):214,103, 2022. https://doi.org/10.1063/5.0084988

4. Shrinidhi S. Pandurangi, Andrew Akerson, Ryan S. Elliott, Timothy J. Healey, Nicolas Triantafyllidis. “Nucleation of creases and folds in hyperelastic solids is not a local bifurcation.” Journal of the Mechanics and Physics of Solids, 160:104,749, 2022. https://doi.org/10.1016/j.jmps.2021.104749

5. Mingjian Wen, Yaser Afshar, Ryan S. Elliott, Ellad B. Tadmor. “KLIFF: A framework to develop physics-based and machine learning interatomic potentials.” Computer Physics Communications, 272:108,218, 2022. https://doi.org/10.1016/j.cpc.2021.108218

6. Shrinidhi S. Pandurangi, Ryan S. Elliott, Timothy J. Healey, Nicolas Triantafyllidis. “Stable Spatially Localized Configurations in a Simple Structure—A Global Symmetry-Breaking Approach.” *Journal of Elasticity,* 142(1):163–199, September 2020. https://doi.org/10.1007/s10659-020-09794-5

7. Christelle Combescure, Ryan S. Elliott, Nicolas Triantafyllidis. “Deformation patterns and their stability in finitely strained circular cell honeycombs.” *Journal of the Mechanics and Physics of Solids,* 142:103976 June, 2020. https://doi.org/10.1016/j.jmps.2020.103976

8. Daniel S. Karls, Matthew Bierbaum, Alex A. Alemi, Ryan S. Elliott, James P. Sethna, Ellad B. Tadmor. “The OpenKIM processing pipeline: A cloud-based automatic material property computation engine.” *Journal of Chemical Physics,* 153(6):064104 May, 2020. https://doi.org/10.1063/5.0014267

9. Vincent Jusuf, Ryan S. Elliott. “A Framework for the interpretation of Modulated Martensities in Shape Memory Alloys.” *Journal of the Mechanics and Physics of Solids,* 130:103879 Februrary, 2020. https://doi.org/10.1016/j.jmps.2020.103879

10. Mingjian Wen, Sharmila N. Shirodkar, Petr Plechac, Efthimios Kaxiras, Ryan S. Elliott, Ellad B. Tadmor. “A force-matching Stillinger-Weber potential for MoS_2: Parameterization and Fisher information theory based sensitivity analysis.” *Journal of Applied Physics*, 122:244301 December, 2017. https://doi.org/10.1063/1.5007842

11. Christelle Combescure, Ryan S. Elliott. “Hierarchical honeycomb material design and optimization: Beyond linearized behavior.” *International Journal of Solids and Structures*, 115–116:161–169, 2017. https://doi.org/10.1016/j.ijsolstr.2017.03.011

12. Mingjian Wen, Junhao Li, Peter Brommer, Ryan S. Elliott, James P. Sethna, Ellad B. Tadmor. “A KIM-compliant potfit for fitting sloppy interatomic potentials: Application to the EDIP model for silicon.” *Modelling and Simulation in Materials Science and Engineering*, 25:014,001, 2017. http://dx.doi.org/10.1088/0965-0393/25/1/014001 [selected to be part of “MSMSE *Highlights of 2017*”]

13. Christelle Combescure, Pierre Henry, Ryan S. Elliott. “Post-bifurcation and stability of a finitely strained hexagonal honeycomb subjected to equi-biaxial in-plane loading.” *International Journal of Solids and Structures*, 88–89:296–318, 2016. http://dx.doi.org/10.1016/j.ijsolstr.2016.02.016

14. Mingjian Wen, Steven M. Whalen, Ryan S. Elliott, Ellad B. Tadmor. “Interpolation effects in tabulated interatomic potentials.” *Modelling and Simulation in Materials Science and Engineering*, 23:074,008, 2015. http://dx.doi.org/10.1088/0965-0393/23/7/074008

15. Amartya S. Banerjee, Ryan S. Elliott, Richard D. James. “A spectral scheme for Kohn-Sham density functional theory of clusters.” *Journal of Computational Physics*, 287:226–253, 2015. http://dx.doi.org/10.1016/j.jcp.2015.02.009

16. Subrahmanyam Pattamatta, Ryan S. Elliott, Ellad B. Tadmor. “Mapping the stochastic response of nanostructures.” *Proceedings of the National Academy of Sciences of the United States of America*, 111(17):E1678–E1686, April 2014. http://dx.doi.org/10.1073/pnas.1402029111

17. Viacheslav Sorkin, Ryan S. Elliott, Ellad B. Tadmor. “A local quasicontinuum for 3D multilattice crystalline materials: Application to shape-memory alloys.” *Modelling and Simulation in Materials Science and Engineering*, 22:055,001 (22pp), 2014. http://dx.doi.org/10.1088/0965-0393/22/5/055001

18. Ellad B. Tadmor, Ryan S. Elliott, Simon R. Phillpot, Susan B. Sinnott. “NSF cyberinfrastructures: A new paradigm for advancing materials simulation.” *Current Opinion in Solid State & Materials Science*, 17(6):298–304, December 2013. http://dx.doi.org/10.1016/j.cossms.2013.10.004

19. Ryan S. Elliott, Daniel S. Karls. “Entropic stabilization of austenite in shape memory alloys.” *Journal of the Mechanics and Physics of Solids*, 61(12):2522–2536, December 2013. http://dx.doi.org/10.1016/j.jmps.2013.07.013

20. Venkata Suresh Guthikonda, Ryan S. Elliott. “Modeling martensitic phase transformation in shape memory alloys with the self-consistent lattice dynamics approach.” *Journal of the Mechanics and Physics of Solids*, 61(4):1010–1026, April 2013. http://dx.doi.org/10.1016/j.jmps.2012.12.003

21. Amin Aghaei, Kaushik Dayal, Ryan S. Elliott. “Anomalous phonon behavior of carbon nanotubes: First-order influence of external load.” *Journal of Applied Physics*, 113:023,503, January 2013. http://dx.doi.org/10.1063/1.4774077

22. Amin Aghaei, Kaushik Dayal, Ryan S. Elliott. “Symmetry-adapted phonon analysis of nanostructures.” *Journal of the Mechanics and Physics of Solids*, 61(2):557–578, December 2012. http://dx.doi.org/10.1016/j.jmps.2012.09.008

23. Ellad B. Tadmor, Ryan S. Elliott, James P. Sethna, Ronald E. Miller, Chandler A. Becker. “The potential of atomistic simulations and the Knowledgebase of Interatomic Models.” *JOM*, 63(7):17, July 2011. http://dx.doi.org/10.1007/s11837-011-0102-6

24. Dipta B. Ghosh, Matteo Cococcioni, Ryan S. Elliott. “Structural phase transition path-following and stable phase scouting through a coupled DFT-BFB algorithm.” *Modelling and Simulation in Materials Science and Engineering*, 19:085,007 (1–17), 2011. http://dx.doi.org/10.1088/0965-0393/19/8/085007

25. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Reversible stress-induced martensitic phase transformations in a bi-atomic crystal.” *Journal of the Mechanics and Physics of Solids*, 59(2):216–236, February 2011. http://dx.doi.org/10.1016/j.jmps.2010.10.011

26. Venkata Suresh Guthikonda, Ryan S. Elliott. “Erratum: An effective interaction potential model for the shape memory alloy AuCd.” *Continuum Mechanics and Thermodynamics*, 23(2):177–183, March 2011. http://dx.doi.org/10.1007/s00161-010-0169-2

27. Venkata Suresh Guthikonda, Ryan S. Elliott. “An effective interaction potential model for the shape memory alloy AuCd.” *Continuum Mechanics and Thermodynamics*, 21(4):269–295, September 2009. http://dx.doi.org/10.1007/s00161-009-0109-1

28. Venkata Suresh Guthikonda, Ryan S. Elliott. “Stability and elastic properties of the stress-free B2 (CsCl-type) crystal for the Morse pair potential model.” *Journal of Elasticity*, 92(2):151–186, August 2008. http://dx.doi.org/10.1007/s10659-008-9155-3

29. Ryan S. Elliott. “Multiscale bifurcation and stability of multilattices.” *Journal of Computer-Aided Materials Design*, 14(Supplement 1):143–157, December 2007. http://dx.doi.org/10.1007/s10820-007-9075-8

30. Matthew Dobson, Ryan S. Elliott, Mitchell Luskin, Ellad B. Tadmor. “A multilattice quasicontinuum for phase transforming materials: Cascading Cauchy-Born kinematics.” *Journal of Computer-Aided Materials Design*, 14(Supplement 1):219–237, December 2007. http://dx.doi.org/10.1007/s10820-007-9084-7

31. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Stability of crystalline solids—I: Continuum and atomic-lattice considerations.” *Journal of the Mechanics and Physics of Solids*, 54(1):161–192, January 2006. http://dx.doi.org/10.1016/j.jmps.2005.07.009

32. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of crystalline solids—II: Application to temperature-induced martensitic phase transformations in bi-atomic crystals.” *Journal of the Mechanics and Physics of Solids*, 54(1):193–232, January 2006. http://dx.doi.org/10.1016/j.jmps.2005.07.008

33. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of pressure-dependent, thermally-induced displacive transformations in bi-atomic crystals.” *International Journal of Solids and Structures*, 39(13–14):3845–3856, June–July 2002. http://dx.doi.org/10.1016/S0020-7683(02)00183-X

34. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of thermally-induced martensitic transformations in bi-atomic crystals.” *Journal of the Mechanics and Physics of Solids*, 50(11):2463–2493, September 2002. http://dx.doi.org/10.1016/S0022-5096(02)00012-1

Software and Data Publications

See **ORCID iD: 0000-0003-4988-8306** listing for complete details of **131** items (as of 18-Jan-2023)

Conference Papers

1. Y. Kurniawan *et al*., "Extending OpenKIM with an Uncertainty Quantification Toolkit for Molecular Modeling," *2022 IEEE 18th International Conference on e-Science (e-Science)*, Salt Lake City, UT, USA, 2022, pp. 367-377, doi: 10.1109/eScience55777.2022.00050.

2. D. S. Karls, S. M. Clark, B. A. Waters, R. S. Elliott and E. B. Tadmor, "HPC Extensions to the OpenKIM Processing Pipeline," *2022 IEEE 18th International Conference on e-Science (e-Science)*, Salt Lake City, UT, USA, 2022, pp. 278-283, doi: 10.1109/eScience55777.2022.00041.

3. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Reversible temperature- and stress-induced martensitic transitions in crystals.” In “Twenty-Fourth International Conference of Theoretical and Applied Mechanics,” pp. 1–2. Montreal, CAD, August 2016

4. Amartya S. Banerjee, Ryan S. Elliott. “A framework for frequently occurring non-generic degeneracies.” In “Twenty-Fourth International Conference of Theoretical and Applied Mechanics,” pp. 1–2. Montreal, CAD, August 2016

5. Christelle Combescure, Nicholas Triantafyllidis, Ryan S. Elliott. “In-plane loading of hexagonal honeycombs: Post-bifurcation and stability behavior.” In “Twenty-Fourth International Conference of Theoretical and Applied Mechanics,” pp. 1–2. Montreal, CAD, August 2016

6. Venkata Suresh Guthikonda, Ryan S. Elliott. “Thermodynamic modeling of martensitic phase transformations.” In Masayoshi Tomizuka, Chung-Bang Yun, Victor Giurgiutiu, Jerome P. Lynch, eds., “Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2010,” volume 7647 of *Proc. of SPIE*, pp. 76,472D–1–11. The International Society for Optical Engineering (SPIE), March 2010. http://dx.doi.org/10.1117/12.847640

7. Dipta B. Ghosh, Matteo Cococcioni, Ryan S. Elliott. “Structural phase transition path-following and stable phase scouting through a coupled DFT-BFB algorithm.” In Masayoshi Tomizuka, Chung-Bang Yun, Victor Giurgiutiu, Jerome P. Lynch,

eds., “Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2010,” volume 7647 of *Proc. of SPIE*, pp. 76,474P–1–11. The International Society for Optical Engineering (SPIE), March 2010. http://dx.doi.org/10.1117/12.847669

8. Venkata Suresh Guthikonda, Ryan S. Elliott. “Toward an effective interaction potential model for the shape memory alloy AuCd.” Technical report, Aerospace Engineering and Mechanics, The University of Minnesota, Minneapolis, MN 55455, 2008. AEM Report Number 2008-1

9. Matthew Dobson, Ryan S. Elliott, Ellad B. Tadmor. “A quasicontinuum for complex crystals.” In Peter Gumbsch, ed., “Third International Conference on Multiscale Materials Modeling,” pp. 889–896. Freiburg, Germany, September 2006

10. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of dispersive bi-atomic crystals.” In Dimitris C. Lagoudas, ed., “Smart Structures and Materials 2004: Active Materials: Behavior and Mechanics,” volume 5387 of *Proc. SPIE*, pp. 239–248. The International Society for Optical Engineering (SPIE), July 2004. http://dx.doi.org/10.1117/12.539813

Dissertations and Theses

1. Ryan S. Elliott. *Lattice-level instabilities in bi-atomic alloys*. Ph.D. dissertation, Department of Aerospace Engineering, The University of Michigan, Ann Arbor, Michigan, U.S.A., 2004

2. Ryan S. Elliott. *A Method for Calculating Three-Dimensional Quasi-Static Canine Pelvic Limb Joint Moments and Power During Gait*, Bachelor thesis, Michigan State University, East Lansing, Michigan, U.S.A., December 1998

Software Projects

See also: ORCID iD: 0000-0003-4988-8306

SyBFB 2005—Present

Symmetry aware Branch-Following and Bifurcation. This open source software package (available upon request) forms the core numerical code used within the Elliott research group for performing numerical continuation and bifurcation analyses.

KIM-API 2011—2023

Knowledgebase of Interatomic Models (KIM) Application Programming Interface (API). This open source software package is currently extensively used by the atomistic materials modeling community and is a key software component of the KIM project. (with E. Tadmor)

ColabFit 2020—2023
This project aims to create a computational framework "ColabFit" that enables researchers to rapidly develop and deploy data-driven interatomic potentials (DDIPs) for complex material systems by connecting existing cyberinfrastructure resources of first principles and experimental data with a variety of fitting frameworks. (with E. Tadmor, S. Martiniani)

LAMMPS/KIM 2012—2023
This open source software package implements the KIM-API within the popular LAMMPS molecular dynamics package. (with E. Tadmor, Y. Afshar)

Websites

http://modelingmaterials.org 2011—Present
This website is associated with the book "Continuum Mechanics and Thermodynamics" co-authored by Elliott (see above under "Books and Book Chapters"), as well as the associated book "Modeling Materials". The website provides general information, resources for readers and instructors, and errata.

https://openkim.org 2009—2023
Website associated with the Knowledgebase of Interatomic Models (KIM) project. It serves as the central repository and testing hub for interatomic potentials.

https://colabfit.org 2020—2023
Website associated with the Collaborative Development of Data-Driven Interatomic Potentials for Predictive Molecular Simulations (ColabFit) project.

http://riseofdata.org 2015—2017
This website is associated with the "Rise of Data in Materials Research" project tasked with developing a Position Paper reflecting the materials community views on the role of data in materials research. The website serves as a clearinghouse for discussion and information on this topic.

Invited Seminars

1. Ryan S. Elliott. "The wild complexity born from a simple nonlinearity, and how to tame it: A reprise of the `beam on an elastic foundation`." Mechanical Engineering and Materials Science, Duke University, Durham, NC, October 2019

2. Ryan S. Elliott. "Molecular simulations you can trust and reproduce: The OpenKIM framework." Interdisciplinary Centre for Advanced Materials Simulation (ICAMS), Ruhr-Universität Bochum, Germany, September 2019

3. Ryan S. Elliott. "OpenKIM: Reliable Interatomic Models for Multiscale Simulations." Laboratoire de Mécanique des Solides (LMS), École Polytechnique, France, June 2019

4. Ryan S. Elliott. “The OpenKIM Suite of Interatomic Potentials and The KIM Application Programming Interface (API).” Department of Mechanical Engineering, The University of Michigan, February 2018

5. Ryan S. Elliott. “Mapping the Complex and Stochastic Response of Nanostructures.” Department of Aerospace Engineering, The University of Michigan, February 2018

6. Ryan S. Elliott. “Computational structures and materials characterization with branch-following and bifurcation techniques.” Applied Mathematics Seminar, University of California Berkeley and Lawrence Berkeley Laboratory, Berkeley, CA, October 2017

7. Ryan S. Elliott. “Computational structures and materials characterization with branch-following and bifurcation techniques.” US Army Research Laboratory, Aberdeen, MD, March 2016

8. Ryan S. Elliott. “A new framework for the interpretation of modulated martensites in shape memory alloys.” California Institute of Technology, Graduate Aerospace Laboratories (GALCIT), Pasadena, CA, May 2015

9. Ryan S. Elliott. “Mapping the stochastic response of nanostructures.” Department of Mechanical Engineering, University of Houston, Houston, TX, April 2015

10. Ryan S. Elliott. “Computational structures and materials characterization with branch-following and bifurcation techniques.” Applied Mathematics and Computational Science / Penn Institute for Computational Science, Philadelphia, PA, February 2015

11. Ryan S. Elliott. “The Knowledgebase of Interatomic Models: An online resource for standardized testing and long-term warehousing of interatomic models and data.” CERMICES, École des Ponts Paristech, September 2014

12. Ryan S. Elliott. “A new framework for the interpretation of modulated martensites in shape memory alloys.” Laboratoire de Mécanique des Solides (LMS), École Polytechnique, France, September 2014

13. Ryan S. Elliott. “The Knowledgebase of Interatomic Models: An online resource for standardized testing and long-term warehousing of interatomic models and data.” Elements of ICME Workshop, Computational Science and Engineering Program, The University of Illinois, Urbana-Champaign, IL, July 2014

14. Ryan S. Elliott. “Mapping the stochastic response of nanostructures.” Thomas Young Centre: The London Centre for The Theory and Simulation of Materials, London, UK, February 2014

15. Ryan S. Elliott. “The Knowledgebase of Interatomic Models: An online resource for standardized testing and long-term warehousing of interatomic models and data.” Computational Science and Engineering Department, Science & Technology Facilities Council (STFC), Daresbury, Cheshire, UK, February 2014

16. Ryan S. Elliott. “Computational materials characterization with branch-following and bifurcation techniques and the Knowledgebase of Interatomic Models (KIM).” Scientific Computing 8190 Research Seminar organized by Renata Wentzcovitch, Minneapolis, MN, October 2013

17. Ryan S. Elliott. “The Knowledgebase of Interatomic Models (KIM): An online resource for standardized testing and long-term warehousing of interatomic models and data.” Department of Mechanical Engineering, The University of Michigan, October 2013

18. Ryan S. Elliott. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations: Cascading Cauchy-Born Kinematics.” Department of Mechanical Engineering, The Pennsylvania State University, December 2012

19. Ryan S. Elliott. “Modeling materials: Continuum, atomistic, and multiscale techniques OR stability and bifurcation in elastic structures and materials.” AICES EU Regional School Course 7, RWTH Aachen University, Aachen, Germany, August 2012

20. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna, Ronald E. Miller, Chandler A. Becker, Valeriu Smirichenski, Trevor J. Wennblom. “Ensuring reliability, reproducibility and transferability in atomistic simulations: The Knowledgebase of Interatomic Models (openkim.org).” Scalable Algorithms Department, Sandia National Laboratory, Albuquerque, NM, July 2012

21. Ryan S. Elliott. “Atomistic modeling and simulation of shape memory alloys.” Solid State Physics Seminar: Physics Department, University of Minnesota, Minneapolis, MN, April 2012

22. Vincent Jusuf, Ryan S. Elliott. “A branch-following and bifurcation study of modulated martensites in shape memory alloys.” Geomechanics Seminar: Civil Engineering, University of Minnesota, Minneapolis, MN, September 2011

23. Ryan S. Elliott, Venkata Suresh Guthikonda. “Modeling martensitic phase transformations using the self-consistent lattice dynamics approach.” Stability and nonlinear solid mechanics: symposium in honor of Nguyen Quoc Son, Laboratoire de Mécanique des Solides (LMS), École Polytechnique, France, September 2010

24. Ryan S. Elliott. “Thermodynamic modeling of martensitic transformations in shape memory alloys.” Department of Mathematical Sciences, University of Bath, Bath, UK, September 2010

25. Ryan S. Elliott. “Atomistic modeling and simulation of shape memory alloys.” University of Minnesota, Department of Aerospace Engineering and Mechanics, Minneapolis, MN, April 2010

26. Ryan S. Elliott. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations: Cascading Cauchy-Born Kinematics.” California Institute of Technology, Graduate Aerospace Laboratories (GALCIT), Pasadena, CA, March 2010

27. Ryan S. Elliott. “From atomistic EIPs to BFB investigations to QC/CCB simulations.” Atomistic Models of Solids; joint workshop OxMOS New Frontiers in the Mathematics of Solids & UK Network Mathematical Challenges in Molecular Dynamics, Oxford, UK, December 2009

28. Ryan S. Elliott. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations: Cascading Cauchy-Born kinematics.” Scientific Computing 8190 Research Seminar; organized by Renata Wentzcovitch, Minneapolis, MN, November 2009

29. Ryan S. Elliott. “A Knowledgebase of Interatomic Models (KIM): A platform for the integrated development, testing and application of atomistic models.” NIST Workshop on Atomistic Simulations for Industrial Needs, NIST, MSEL Metallurgy Division, Gaithersburg, MD, April 2009

30. Ryan S. Elliott. “Shape memory alloy medical devices and why they work.” Michigan Association for Healthcare Documentation Integrity (AHDI), Huron River Chapter, Ann Arbor, MI, March 2009

31. Ryan S. Elliott. “Atomistic modeling of martensitic transformation in shape memory alloys: Theoretical and computational techniques.” Department of Mechanical, Materials and Aerospace Engineering, The University of Central Florida, Orlando, FL, October 2008

32. Ryan S. Elliott. “Atomistic modeling of martensitic transformation in shape memory alloys: Theoretical and computational techniques.” Thermal Sciences and Materials, Air Force Research Laboratory, Wright-Patterson Air Force Base, Dayton, OH, October 2008

33. Ryan S. Elliott. “Atomistic modeling of martensitic transformation in shape memory alloys: Theoretical and computational techniques.” Cornell University, Theoretical and Applied Mechanics, Ithaca, NY, September 2008

34. Ryan S. Elliott. “Atomistic modeling of martensitic transformation in shape memory alloys: Theoretical and computational techniques.” NASA Glenn, Materials Division, Cleveland, OH, July 2008

35. Ryan S. Elliott. “Atomistic modeling of martensitic transformation in shape memory alloys: Theoretical and computational techniques.” Stony Brook University, Department of Mechanical Engineering, Stony Brook, NY, April 2008

36. Ryan S. Elliott. “A Knowledgebase of Interatomic Models (KIM): A platform for the integrated development, testing and application of atomistic models.” NIST Workshop on Atomistic Simulations for Industrial Needs, NIST, MSEL Metallurgy Division, Gaithersburg, MD, April 2008

37. Ellad B. Tadmor, Ryan S. Elliott. “A quasicontinuum for phase transforming materials.” Third Wave Systems, Minneapolis, MN, January 2008

38. Ryan S. Elliott. “Equilibrium path-following, bifurcation, and stability techniques for studying temperature-induced and stress-induced martensitic transformations in crystalline shape memory alloys.” University of California, Merced, Applied Mathematics, Merced, CA, September 2007

39. Ryan S. Elliott. “Computing equilibrium path stability and bifurcation for crystals.” Civil Engineering Department, The University of Minnesota, Minneapolis, MN, April 2007

40. Ryan S. Elliott. “Computing bifurcation and stability properties of crystals.” DOE Computational Science Graduate Fellowship Conference, Washington D.C., June 2005

41. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” Institute for Mathematics and its Applications, Minneapolis, MN, March 2005

42. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” NIST, MSEL Metallurgy Division, Gaithersburg, MD, June 2004

43. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” Brown University, Division of Engineering, Providence, RI, April 2004

44. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” Harvard University, DEAS, Cambridge, MA, April 2004

45. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” The University of Illinois at Urbana-Champaign, Department of Aerospace Engineering, Urbana-Champaign, IL, April 2004

46. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” Cornell University, Department of Theoretical & Applied Mechanics, Ithaca, NY, April 2004

47. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” The University of Minnesota–Twin Cities, Department of Aerospace Engineering & Mechanics, Minneapolis, MN, April 2004

48. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” The University of Notre Dame, Department of Aerospace & Mechanical Engineering, Notre Dame, IN, March 2004

Tutorial Lectures / Coding Sprints

OpenKIM Coding Sprints Jul. 30—Aug. 10, 2018; Aug. 18—24, 2018
Institute for Mathematics and its Applications (IMA), University of Minnesota, MN

Elastic Stability of Materials, Short Course Jul. 20—23, 2015
University of Huston, TX

KIM API Bootcamp (available online) Aug. 2016; Feb. ’12
Minneapolis, MN

KIM Content Carnival (KIM API Tutorial) Aug. 2014; Oct., Aug., Mar. ’12
College Park, MD; Singapore; Aachen, Germany; Minneapolis, MN

USNCCM Short Course Jul. 2011
Minneapolis, MN

Invited Conference Presentations

1. Ryan S. Elliott. “The wild complexity born from a simple nonlinearity, and how to tame it: A reprise of the `beam on an elastic foundation`.” Materials Research Society Fall Meeting, Boston, MA, December 2019

2. Ryan S. Elliott, Ellad B. Tadmor. “Molecular simulations you can trust and reproduce: The OpenKIM framework.” EPSRC Centre for Doctoral Training in Modelling of Heterogeneous Systems - HetSys, Launch Event, University of Warwick, Coventry, England, September 2019

3. Ryan S. Elliott. “A Framework for the Interpretation of Modulated Martensites in Shape Memory Alloys.” USACM: Recent Advances in the Modeling and Simulation of the Mechanics of Nanoscale Materials, Philadelphia, PA, August 2019

4. Ryan S. Elliott, Ellad B. Tadmor, Daniel S. Karls, James P. Sethna. “OpenKIM: Reliable interatomic models for multiscale simulations.” SIAM Conference on Computational Science and Engineering, Spokane, WA, February 2019

5. Ryan S. Elliott. “Post-bifurcation and stability of a finitely strained hexagonal honeycomb subjected to equi-biaxial in-plane loading.” SIAM Conference Mathematical Aspects of Materials Science (MS18), Portland, OR, July 2018

6. Ryan S. Elliott, Ellad B. Tadmor, Subrahmanyam Pattamatta. “Mapping the stochastic response of nanostructures.” 18th U.S. National Congress of Theoretical and Applied Mechanics, Chicago, IL, June 2018

7. Ryan S. Elliott, Daniel S. Karls, Ellad B. Tadmor. “OpenKIM: Tested, portable interatomic models for molecular and multiscale simulations.” University of Illinois Urbana—Champaign Workshop on materials computation: data science and multiscale modeling, Urbana—Champaign, IL, August 2017

8. Ryan S. Elliott. “Complexity in the equilibrium set of nonlinear mechanical metamaterials: Post-bifurcation of hexagonal honeycombs.” GDR Mechanique Physique, ESPCI Paris, Paris, France, June 2017

9. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna. “The OpenKIM suite of interatomic potentials and the KIM Application Programming Interface (API).” Current Trends in Molecular Dynamics Software Development Workshop, Philadelphia, PA, June 2017

10. Amartya S. Banerjee, Ryan S. Elliott. “A framework for frequently occurring non-generic degeneracies.” International Congress of Theoretical & Applied Mechanics (ICTAM2016), Montreal, CAD, August 2016

11. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Reversible temperature- and stress-induced martensitic transitions in crystals.” International Congress of Theoretical & Applied Mechanics (ICTAM2016), Montreal, CAD, August 2016

12. Christelle Combescure, Nicholas Triantafyllidis, Ryan S. Elliott. “In-plane loading of hexagonal honeycombs: Post-bifurcation and stability behavior.” International Congress of Theoretical & Applied Mechanics (ICTAM2016), Montreal, CAD, August 2016

13. Ryan S. Elliott. “The Knowledgebase of Interatomic Models (KIM): An online resource for standardized testing and long-term warehousing of interatomic models and data.” NIST Workshop on Atomistic Simulations for Industrial Needs, NIST, Gaithersburg, MD, August 2013

14. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys.” Mathematics and Mechanics in the Search for New Materials Workshop, Banff International Research Station for Mathematical Innovation and Discovery, Banff, Alberta Canada, July 2013

15. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna, Ronald E. Miller, Chandler A. Becker. “Ensuring reliability, reproducibility and transferability in atomistic simulations: The Knowledgebase of Interatomic Models (openKIM.org).” CECAM Workshop: Validation and Verification in Electronic-Structure calculations: state of the art and perspectives. Held at École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, September 2012

16. Ryan S. Elliott, Venkata Suresh Guthikonda. “Modeling martensitic phase transformations via the self-consistent lattice dynamics approach.” Division of Civil, Mechanical and Manufacturing Innovation (CMMI), National Science Foundation, Boston, MA, July 2012

17. Ryan S. Elliott. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations: Cascading Cauchy-Born Kinematics.” Isaac Newton Institute (INI) and the Wales Institute of Mathematical and Computational Sciences (WIMCS), Joint Follow-Up Meeting on COMPUTATIONAL CHALLENGES IN PARTIAL DIFFERENTIAL EQUATIONS, Swansea, Wales, UK, April 2011

18. Ryan S. Elliott, Venkata Suresh Guthikonda. “Modeling martensitic phase transformations using the self-consistent lattice dynamics approach.” Stability and nonlinear solid mechanics: symposium in honor of Nguyen Quoc Son, Laboratoire de Mécanique des Solides (LMS), École Polytechnique, France, September 2010

19. Ryan S. Elliott. “An effective interaction potential model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” Young Researchers Symposium sponsored by the Mechanics and Materials Division of the Japan Society of Mechanical Engineers (JSME), Pasadena, CA, March 2010

20. Ryan S. Elliott, Venkata S.R. Guthikonda. “Elastic properties and stability of the stress-free B2 crystal for the Morse pair-potential model.” ASME International ME2009 Congress and Exposition, Orlando, FL, November 2009. Drucker symposium in honor of James R. Barber

21. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “A model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” International Conference on Thermo-Mechanical Modeling of Solids, Laboratoire de Mécanique des Solides (LMS), École Polytechnique, France, July 2007

Contributed Conference Presentations

1. Ryan S. Elliott, Daniel Karls, Steven Clark, Brendon Waters, Ellad B. Tadmor. “HPC extensions to the OpenKIM processing pipeline.” 2022 IEEE 18th International Conference on e-Science (e-Science), Salt Lake City, UT, October 2022

2. Ryan S. Elliott, Andrew J. Akerson, Shrinidhi S. Pandurangi, Timothy J. Healey, Nicolas Triantafyllidis. “Creases in soft materials are localized wrinkles, not distinct bifurcations.” ASME International ME2019 Congress and Exposition, Salt Lake City, UT, November 2019

3. Ryan S. Elliott, Ellad B. Tadmor “Molecular simulations you can trust and reproduce: The OpenKIM framework.” ASME International ME2019 Congress and Exposition, Salt Lake City, UT, November 2019

4. Ryan S. Elliott. “A `How-To` Tutorial on Using OpenKIM with LAMMPS.” LAMMPS User Workshop, Albuquerque, NM, August 2019

5. Ryan S. Elliott, Ellad B. Tadmor, Daniel S. Karls, James P. Sethna. “Openkim: Reliable interatomic models for multiscale simulations.” ASME International ME2018 Congress and Exposition, Pittsburgh, PA, November 2018

6. Ryan S. Elliott, Christelle Combescure. “Hierarchical honeycomb material design and optimization: beyond linearized behavior.” ASME International ME2018 Congress and Exposition, Pittsburgh, PA, November 2018

7. Ariel Ibarra Pino, Ryan S. Elliott. “On the derivation and use of Bloch’s theorem for the evaluation of Lyapunov’s stability criterion.” ASME International ME2017 Congress and Exposition, Tampa, FL, November 2017

8. Ryan S. Elliott, Ellad B. Tadmor, Viacheslav Sorkin. “A local quasicontinuum method for 3D multilattice crystalline materials: Application to shape-memory alloys.” ASME International ME2017 Congress and Exposition, Tampa, FL, November 2017

9. Ryan S. Elliott, Ellad B. Tadmor. “A brief user’s guide and developer’s introduction to OpenKIM.” LAMMPS User Workshop, Albuquerque, NM, August 2017

10. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna, Daniel S. Karls. “The Knowledgebase of Interatomic Models (KIM): An open system for synergistic interactions within the atomistic-scale computational mechanics community.” 54th Annual Technical Meeting of the Society of Engineering Science (SES 2017), Boston, MA, July 2017

11. Ryan S. Elliott, Christelle Combescure. “Post-bifurcation and stability of a finitely strained hexagonal honeycomb subjected to equi-biaxial in-plane loading.” 54th Annual Technical Meeting of the Society of Engineering Science (SES 2017), Boston, MA, July 2017

12. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys (with OpenKIM).” ICOMAT 2017, Chicago, IL, July 2017

13. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna. “Ensuring reliability, reproducibility and transferability in atomistic simulations: The Knowledgebase of Interatomic Models.” Fourth World Congress on Integrated Computational Materials Engineering (ICME 2017), Ann Arbor, MI, May 2017

14. Ryan S. Elliott, Amartya S. Banerjee. “A framework for frequently occurring non-generic degeneracies.” ASME International ME2015 Congress and Exposition, Phoenix, AZ, November 2016

15. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys (with OpenKIM).” Society of Engineering Science 53rd Annual Technical Meeting, College Park, MD, October 2016

16. Ryan S. Elliott, Christelle Combescure, Pierre Henry. “Post-bifurcation and stability of a finitely strained hexagonal honeycomb subjected to equi-biaxial in-plane loading.” MACH Conference, Annapolis, MD, March 2016

17. Ryan S. Elliott, Ellad B. Tadmor, Subrahmanyam Pattamatta. “Mapping the stochastic response of nanostructures.” MACH Conference, Annapolis, MD, March 2016

18. Ryan S. Elliott. “The Knowledgebase of Interatomic Models (OpenKIM) and the large-scale atomic/molecular massively parallel simulator (LAMMPS).” LAMMPS User Workshop, Albuquerque, NM, August 2015

19. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys.” ASME International ME2015 Congress and Exposition, Houston, TX, August 2015

20. Ryan S. Elliott, Ellad B. Tadmor, Subrahmanyam Pattamatta. “Mapping the stochastic response of nanostructures.” ASME International ME2015 Congress and Exposition, Houston, TX, November 2015

21. Ryan S. Elliott, Ellad B. Tadmor, Jiadi Fan, Hao Xu. “The Knowledgebase of Interatomic Models (KIM) and examples of atomistic simulations and how their results depend on the software implementation of the interatomic model.” ASME International ME2015 Congress and Exposition, Houston, TX, August 2015

22. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys.” Fifteenth Pan-American Congress of Applied Mechanics, Urbana-Champaign, IL, May 2015

23. Ryan S. Elliott, Christelle Combescure. “Post-bifurcation analysis of hierarchal honeycombs.” ASME International ME2014 Congress and Exposition, Montreal, Canada, November 2014

24. Ryan S. Elliott, Ellad B. Tadmor. “Mapping the stochastic response of nanostructures.” ASME International ME2014 Congress and Exposition, Montreal, Canada, November 2014

25. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna, Daniel S. Karls, Matthew Bierbaum, Alexander A. Alemi, Adam Ludvik, Trevor J. Wennblom. “KIM application programming interface as a standard for molecular simulations.” Society of Engineering Science 51st Annual Technical Meeting, West Lafayette, IN, September 2014

26. Ryan S. Elliott, Nicolas Triantafyllidis. “Stability of periodic solids: From composites to crystals.” 17th U.S. National Congress on Theoretical and Applied Mechanics, East Lansing, MI, June 2014

27. Ryan S. Elliott. “Equivariant post-bifurcation analysis of a regular honeycomb structure under bi-axial loading.” 17th U.S. National Congress on Theoretical and Applied Mechanics, East Lansing, MI, June 2014

28. Ryan S. Elliott. “The Knowledgebase of Interatomic Models: An online resource for standardized testing and long-term warehousing of interatomic models and data.” Multiscale Methods and Validation in Medicine and Biology II: Biomechanics and Mechanobiology, Berkeley, CA, February 2014

29. Ryan S. Elliott, Pierre Henry. “Post-bifurcation analysis of a regular honeycomb structure under in-plane bi-axial loading.” ASME International ME2013 Congress and Exposition, San Diego, CA, November 2013

30. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys.” ASME International ME2013 Congress and Exposition, San Diego, CA, November 2013

31. Ryan S. Elliott. “Simulation and verification of structure-properties relationships in materials via the Knowledgebase of Interatomic Models (openKIM.org): Data requirements and simulation tools.” Materials Science & Technology 2013 (MS&T’13), Montreal, Canada, October 2013

32. Ryan S. Elliott. “Knowledgebase of Interatomic Models.” LAMMPS User Workshop, Albuquerque, NM, August 2013

33. Ryan S. Elliott, Pierre Henry. “Post-bifurcation analysis of a regular honeycomb structure under bi-axial loading.” Society of Engineering Science 50th Annual Technical Meeting and ASME-AMD Summer Meeting, Providence, RI, July 2013

34. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys.” Society of Engineering Science 50th Annual Technical Meeting and ASME-AMD Summer Meeting, Providence, RI, July 2013

35. Ryan S. Elliott, Vincent Jusuf. “A new framework for the interpretation of modulated martensites in shape memory alloys.” SIAM Conference on Mathematical Aspects of Materials Science (MS13), Philadelphia, PA, June 2013

36. Ryan S. Elliott, Venkata Suresh Guthikonda. “The Knowledgebase of Interatomic Models (KIM) and modeling martensitic phase transformations using the self-consistent lattice dynamics approach.” ASME International ME2012 Congress and Exposition, Houston, TX, November 2012

37. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna. “Ensuring reliability, reproducibility and transferability in atomistic simulations: the Knowledgebase of Interatomic Models (openKIM.org).” Multiscale Materials Modeling 2012 (MMM2012), Singapore, October 2012

38. Vincent Jusuf, Ryan S. Elliott. “A new framework for the interpretation of modulated martensites in shape memory alloys.” Multiscale Materials Modeling 2012 (MMM2012), Singapore, October 2012

39. Ryan S. Elliott. “Ensuring reliability, reproducibility and transferability in atomistic simulations: The Knowledgebase of Interatomic Models (openKIM.org).” CSGF+1: Computational Science Graduate Fellowship conference, Washington D.C., July 2012

40. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “An effective interaction potential model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” ASME International ME2011 Congress and Exposition, Denver, CO, November 2011

41. Ryan S. Elliott, Ellad B. Tadmor. “The Knowledgebase of Interatomic Models (KIM) and non-uniqueness in energy minimization of atomistic problems.” ASME International ME2011 Congress and Exposition, Denver, CO, November 2011

42. Ryan S. Elliott, Ellad B. Tadmor, James P. Sethna, Ronald E. Miller, Chandler A. Becker, Valeriu Smirichinski, Trevor J. Wennblom. “KIM application programming interface as a standard for molecular simulations.” AIChE 2011 Annual Meeting, Minneapolis, MN, October 2011

43. Ellad B. Tadmor, Ryan S. Elliott, James P. Sethna, Ronald E. Miller, Chandler A. Becker, Valeriu Smirichinski, Trevor J. Wennblom. “Ensuring reliability, reproducibility and transferability in atomistic simulations: the Knowledgebase of Interatomic Models.” AIChE 2011 Annual Meeting, Minneapolis, MN, October 2011

44. Ryan S. Elliott, Ellad B. Tadmor. “Non-uniqueness in energy minimization of atomistic problems: A branch-following and bifurcation investigation.” 48th Annual Technical Conference of Society of Engineering Sciences (SES), Evanston, IL, October 2011

45. Ryan S. Elliott, Venkata Suresh Guthikonda. “Modeling martensitic phase transformations using the self-consistent lattice dynamics approach.” 48th Annual Technical Conference of Society of Engineering Sciences (SES), Evanston, IL, October 2011

46. Valeriu Smirichinski, Ryan S. Elliott, Ellad B. Tadmor. “Knowledgebase of Interatomic Models application programming interface.” LAMMPS User Workshop, Albuquerque, NM, August 2011

47. Valeriu Smirichinski, Ellad B. Tadmor, Ryan S. Elliott, James P. Sethna, Ronald E. Miller. “Knowledgebase of Interatomic Models (KIM) and an application program interface as a standard for molecular simulations.” 11th US National Congress on Computational Mechanics (USNCCM), Minneapolis, MN, July 2011

48. Vincent Jusuf, Ryan S. Elliott. “Branch-following and bifurcation methods for crystals: A study of period-extending behavior in a one-dimensional crystal model.” 11th US National Congress on Computational Mechanics (USNCCM), Minneapolis, MN, July 2011

49. Daniel Karls, Ryan S. Elliott. “Entropic stabilization of austenite in shape memory alloys.” 11th US National Congress on Computational Mechanics (USNCCM), Minneapolis, MN, July 2011

50. Ryan S. Elliott, Ellad B. Tadmor. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations: Cascading Cauchy-Born Kinematics.” 11th US National Congress on Computational Mechanics (USNCCM), Minneapolis, MN, July 2011

51. Ryan S. Elliott, Venkata Suresh Guthikonda. “Modeling martensitic phase transformations using self-consistent lattice dynamics (SCLD).” The Minerals, Metals & Materials Society (TMS), 2011 Annual Meeting & Exhibition, San Diego, CA, March 2011

52. Ellad B. Tadmor, Ryan S. Elliott, James P. Sethna. “Open Knowledgebase of Interatomic Models (OpenKIM.org): An online platform for testing and archiving empirical potentials.” Materials Science & Technology 2010 Conference & Exhibition, Houston, TX, October 2010

53. Ryan S. Elliott, Tsvetanka Sendova, Ellad B. Tadmor. “Non-uniqueness in energy minimization of atomistic problems: A branch-following and bifurcation investigation.” Fifth International Conference on Multiscale Materials Modeling, Freiburg, Germany, October 2010

54. Ryan S. Elliott, Venkata Suresh Guthikonda. “Modeling martensitic phase transformations via the self-consistent lattice dynamics approach.” Fifth International Conference on Multiscale Materials Modeling, Freiburg, Germany, October 2010

55. Tsvetanka Sendova, Ryan S. Elliott, Ellad B. Tadmor. “Non-uniqueness in energy minimization of atomistic problems: A branch-following and bifurcation investigation.” 16th US National Congress on Theoretical and Applied Mechanics (USNCTAM), State College, PA, June 2010

56. Ryan S. Elliott, Tsvetanka Sendova, Ellad B. Tadmor. “Non-uniqueness in energy minimization of atomistic problems: A branch-following and bifurcation investigation.” SIAM Conference on Mathematical Aspects of Materials Science (MS10), Philadelphia, PA, May 2010

57. Ryan S. Elliott, Viacheslav Sorkin, Ellad B. Tadmor. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations: Cascading Cauchy-Born Kinematics.” SIAM Conference on Mathematical Aspects of Materials Science (MS10), Philadelphia, PA, May 2010

58. Daniel S. Karls, Ryan S. Elliott. “Entropic stabilization of austenite in shape memory alloys.” SIAM Conference on Mathematical Aspects of Materials Science (MS10), Philadelphia, PA, May 2010

59. Vincent Jusuf, Ryan S. Elliott. “Branch-following and bifurcation methods for crystals: A study of stability and meta-stability in a one-dimensional crystal model.” SIAM Conference on Mathematical Aspects of Materials Science (MS10), Philadelphia, PA, May 2010

60. Venkata Suresh Guthikonda, Ryan S. Elliott. “Thermodynamic modeling of martensitic phase transformations.” SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring (2010), San Diego, CA, March 2010

61. Ryan S. Elliott, Dipta B. Ghosh, Matteo Cococcioni. “Structural phase transition path-following and stable phase scouting through a coupled DFT-BFB algorithm.” SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring (2010), San Diego, CA, March 2010

62. Dipta B. Ghosh, Matteo Cococcioni, Ryan S. Elliott. “Efficient coupling of ab-initio and bifurcation techniques for structural transformations in materials.” Minnesota Supercomputing Institute, Minneapolis, MN, November 2009

63. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “An effective interaction potential model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” ASME International ME2009 Congress and Exposition, Orlando, FL, November 2009

64. Ellad B. Tadmor, Ryan S. Elliott, Viacheslav Sorkin. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations.” ASME International ME2009 Congress and Exposition, Orlando, FL, November 2009

65. Ellad B. Tadmor, Tsvetanka Sendova, Ryan S. Elliott. “A branch-following and bifurcation investigation of atomic-scale problems.” ASME International ME2009 Congress and Exposition, Orlando, FL, November 2009

66. Ryan S. Elliott, Vincent Jusuf. “Multilattice kinematics with centroidal shift degrees of freedom: Phantom Energy Methods and Projection Methods.” ASME International ME2009 Congress and Exposition, Orlando, FL, November 2009

67. Ryan S. Elliott, Daniel S. Karls. “Entropic stabilization of austenite in shape memory alloys.” AEM Solid Mechanics seminar series, Minneapolis, MN, March 2009

68. Ryan S. Elliott, Ellad B. Tadmor, Viacheslav Sorkin. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations.” 4th International Conference on Multiscale Materials Modeling (MMM-2008), Tallahassee, FL, October 2008

69. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “A model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” 4th International Conference on Multiscale Materials Modeling (MMM-2008), Tallahassee, FL, October 2008

70. Ryan S. Elliott, Venkata Guthikonda. “An effective interaction potential model for single crystals of the shape memory alloy AuCd.” 45th Annual Meeting of the Society of Engineering Science, Urbana-Champaign, IL, October 2008

71. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “A model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” 45th Annual Meeting of the Society of Engineering Science, Urbana-Champaign, IL, October 2008

72. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “A model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” International Conference on Martensitic Transformations (ICOMAT’08), Santa Fe, NM, June 2008

73. Ryan S. Elliott, Ellad B. Tadmor, Slava Sorkin, Mitch Luskin, Matthew Dobson. “A quasicontinuum for multilattice crystals exhibiting martensitic phase transformations.” International Conference on Martensitic Transformations (ICOMAT’08), Santa Fe, NM, June 2008

74. Venkata Suresh Guthikonda, Ryan S. Elliott. “Towards an effective interaction potential model for AuCd based on the Morse pair potential.” International Conference on Martensitic Transformations (ICOMAT’08), Santa Fe, NM, June 2008

75. Vincent Jusuf, Ryan S. Elliott. “Multilattice kinematics with centroidal shift degrees of freedom: Phantom Energy Methods and Projection Methods.” International Conference on Martensitic Transformations (ICOMAT’08), Santa Fe, NM, June 2008

76. Ryan S. Elliott. “Branch-following and bifurcation methods to identify active materials for tomorrow’s sensors and actuators.” SPIE 15th Annual International Symposium: Smart Structures and Materials, San Diego, CA, March 2008

77. Ryan S. Elliott, Venkata Guthikonda. “Stability and elastic properties of the stress-free B2 crystal for the Morse pair potential model.” ASME International ME2007 Congress and Exposition, Seattle, WA, November 2007

78. Ryan S. Elliott. “A quasicontinuum for multilattice crystals exhibiting phase transformations.” ASME International ME2007 Congress and Exposition, Seattle, WA, November 2007

79. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “A model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” ASME International ME2007 Congress and Exposition, Seattle, WA, November 2007

80. Ryan S. Elliott. “A quasicontinuum for multilattice crystals exhibiting phase transformations.” McMat 2007 Applied Mechanics & Materials Conference, Austin, TX, June 2007

81. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “A model of stress- and temperature-induced martensitic transformations in perfect bi-atomic crystals.” McMat 2007 Applied Mechanics & Materials Conference, Austin, TX, June 2007

82. Ryan S. Elliott. “A multiscale stability criterion for multilattice crystals.” Third International Conference on Multiscale Materials Modeling, Freiburg, Germany, September 2006

83. Ryan S. Elliott. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” European Symposium on Martensitic Transformations, Bochum, Germany, September 2006

84. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stress-induced martensitic transformations in perfect bi-atomic crystals.” US National Congress of Theoretical and Applied Mechanics (USNCTAM 2006), Boulder, Colorado, June 2006

85. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Bifurcation techniques for structural phase transitions.” American Physical Society (APS), Baltimore, Maryland, March 2006

86. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Martensitic transformation of bi-atomic crystals — modeling shape memory alloys.” ASME International ME2005 Congress and Exposition, Orlando, Florida, November 2005

87. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Stability criteria for multi-atomic crystal structures.” ASME International ME2005 Congress and Exposition, Orlando, Florida, November 2005

88. Ryan S. Elliott. “Computing bifurcation and stability properties of crystals.” AEM Solid Mechanics seminar series, Minneapolis, MN, September 2005

89. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability and martensitic transformation of bi-atomic crystals.” McMat 2005 Mechanics & Materials Conference, Baton Rouge, LA, June 2005

90. Ryan S. Elliott. “Multiple bifurcation of crystalline solids using projection operators.” McMat 2005 Mechanics & Materials Conference, Baton Rouge, LA, June 2005

91. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability and bifurcation of multilattice crystals undergoing martensitic transformation.” Institute for Mathematics and its Applications, Minneapolis, MN, April 2005

92. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Bifurcation and stability of multilattices with applications to martensitic transformations in shape memory alloys.” Institute for Mathematics and its Applications, Minneapolis, MN, March 2005

93. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of multi-atomic crystal structures.” 41th Annual Meeting of the Society of Engineering Science, Lincoln, NE, October 2004

94. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Stability of a dispersive nanoscale thermomechanical model for bi-atomic crystals.” SPIE 11th Annual International Symposium: Smart Structures and Materials, San Diego, CA, March 2004

95. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Soft modes of temperature dependent multilattice crystals.” ASME International Mechanical Engineering Congress, Washington D.C., November 2003

96. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Bifurcation and stability of multilattice crystals with internal shifts.” 40th Annual Meeting of the Society of Engineering Science, Ann Arbor, MI, October 2003

97. Ryan S. Elliott, Nicolas Triantafyllidis, John A. Shaw. “Wavelength-dependent stability considerations for a thermomechanical model of bi-atomic crystals.” 40th Annual Meeting of the Society of Engineering Science, Ann Arbor, MI, October 2003

98. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability concepts for thermally-induced martensitic transformations in crystals.” DOE Computational Science Graduate Fellowship Conference, Washington D.C., July 2003

99. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of thermally-induced martensitic transformations in bi-atomic crystals.” DOE Computational Science Graduate Fellowship Conference, Washington D.C., July 2002

100. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Thermally-induced displacive transformations in bi-atomic crystals.” 14th U.S. National Congress of Theoretical and Applied Mechanics, Blacksburg, VA, June 2002

101. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of thermally-induced martensitic transformations in bi-atomic lattices.” International Conference on Martensitic Transformations (ICOMAT’02), Espoo, Finland, June 2002

102. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of thermally loaded biatomic perfect crystals.” DOE Computational Science Graduate Fellowship Conference, Washington D.C., July 2001

103. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Bifurcation and stability in thermally-loaded NiTi perfect crystals.” ASME International ME2000 Congress and Exposition, Orlando, Florida, November 2000

104. Ryan S. Elliott, John A. Shaw, Nicolas Triantafyllidis. “Stability of thermally-loaded NiTi perfect crystals.” International Congress of Theoretical & Applied Mechanics (ICTAM2000), Chicago, Illinois, August 2000

Courses Taught

* — Indicates a new course developed by R.S. Elliott

2018—Present

AEM 2012 – Dynamics	2020
AEM 3031 – Deformable Body Mechanics	2018
AEM 4501 – Aerospace Structures	2023, ‘22, ’21, ’20, ’19, ‘18
AEM 5501 – Continuum Mechanics	2022
AEM 5503 – Theory of Elasticity	2020
AEM 8525 – Elastic Stability of Materials	2021, ‘18
AEM 8527 – Pattern Formation and Bifurcation in Materials	2019

2011—2018

AEM 2011 – Statics	2015, ’13
AEM 3100 – Software Applications in AEM	2016*
AEM 4501 – Aerospace Structures	2018, ’15, ’14, ’13, ’12
AEM 4502 – Computational Structural Analysis	2017, ’13, ’11
AEM 4511 – Mechanics of Composite Materials	2017, ’16
AEM 4595 – Problems in Mechanics and Materials	2017
AEM 5501 – Continuum Mechanics	2017, ’15
AEM 8525 – Elastic Stability of Materials	2015, ’11
AEM 8527 – Pattern Formation and Bifurcation in Materials	2016*

2005—2010

AEM 2012 – Dynamics 2007
AEM 4501 – Aerospace Structures 2010, ’07, ’06
AEM 4502 – Computational Structural Analysis 2009, ’07, ’05
AEM 5503 – Theory of Elasticity 2010, ’09, ’08
AEM 8525 – Elastic Stability of Materials 2009, ’06*
AEM 8595 – Group Theory and Applications in Mechanics 2009*

External Grants

Current

NSF OAC
Data CI Pilot: CI-Based Collaborative Development of Data-Driven Interatomic Potentials for Predictive Molecular Simulations
$1,127,993; PI-Tadmor, Co-PI-Elliott, Co-PI-Martiniani 10/01/2020—09/30/2023

NSF DMR
Collaborative Research: Reliable Materials Simulation based on the Knowledgebase of Interatomic Models (KIM)
$2,105,161; PI-Tadmor, Co-PI-Elliott, Co-PI- Karypis 10/01/2018—09/31/2023

Completed

NSF CMMI MOMS
Understanding and Creating Switchable Many-State Architectured Materials Through the Exploitation of Nonlinear Post-Buckling Behavior
$283,586; PI-Elliott 06/01/2015—05/31/2018

NSF CDS&E
Collaborative Research: CDS&E: Systematic Multiscale Modeling using the Knowledgebase of Interatomic Models (KIM)
$1,440,000; PI-Tadmor, Co-PI-Elliott, Co-PI-Sethna 10/01/2014—09/30/2018

NSF DMR
Support for Rise of Data in Materials Research Workshop
$119,283; PI-Tadmor, Co-PI-Elliott 06/01/2015—05/31/2018

NSF CDI
CDI-Type II: The Knowledgebase of Interatomic Models (KIM)
$2,000,000; PI-Tadmor, Co-PI-Elliott, Co-PI-Sethna 10/01/2009—09/30/2015

Blue Waters Petascale Undergraduate Internship for Daniel Gerbig
$5,000 (with E. Tadmor) 05/01/2010—08/31/2011

Argonne National Lab
Validating Transferability of Interatomic Potentials Using the Knowledgebase of Interatomic Models (KIM)
85,000 cpu hours; PI-Tadmor, Co-PI-Elliott, Co-PI-Sethna 10/01/2009—09/30/2010

NSF CMMI CAREER
CAREER: Branch-Following and Bifurcation Methods to Identify Active Materials for Tomorrow's Sensors and Actuators
$402,306; PI-Elliott 01/01/2007—12/31/2013

Internal Grants

Completed

Grant-In-Aid
Uncontrolled biological growth mechanisms: Instability of continuum models for growth and remodeling
$44,749 01/01/2017—06/30/2018

MnDRIVE Exploratory Grants
Advanced Manufacturing of Free-Form Optical Sensing Devices using Predictive Multiscale Modeling of Phase-Transforming Materials (with E. Tadmor)
$40,000 01/01/2015—12/31/2015

Graduate School Doctoral Dissertation Fellowship for Daniel Karls
Model Transferability and the Knowledgebase of Interatomic Models (KIM)
(with E. Tadmor)
$22,500 + tuition 09/01/2013—05/31/2014

Russell J. Penrose Faculty Fellowship
$45,000 07/01/2012—06/30/2015

MSI Undergraduate Internship for Nathaniel Beaver
$5,000 06/02/2011—08/08/2011

McKnight Land-Grant Professorship
$65,000 + 1yr leave 07/01/2009—06/30/2011

Office of International Programs, Travel Grant
$2,000 06/2009

MSI Undergraduate Internship for Daniel Karls
$4,800 06/02/2008—08/08/2008

MSI Seed Grant
Efficient coupling of ab-initio and bifurcation techniques for structural transformations in Transition-Metal materials (with. M. Cococcioni)
$50,000 07/01/2008—06/30/2009

MSI Travel Award
$857 03/2008

Grant-In-Aid
Free Energy Functions for Accurate Modeling of Active Material Behavior
$25,412 01/01/2008—06/30/2009

UROP for Daniel Karls
$1,400 12/01/2007—05/15/2018

MSI Research Scholarship for Kaushik Dayal
$18,000 06/03/2007—12/31/2007

Grant-In-Aid
Computationally Assisted Materials Design: A technique for discovering materials with never-before-seen properites
$22,924 01/01/2006—06/30/2007

AHPCRC
Multiscale methods for active materials and HPC (with R. James)
$109,722 01/01/2006—12/31/2006

Graduate and Post-Doctoral Students

Current

Post-Doc. Kyusic Park 2022--Present

Ph.D. Ariel Ibarra Pino 2023 (Exp)
Pattern Formation Design in Architectured Periodic Media

Ph.D. Andrew Vechart 2023 (Exp)
Efficient Algorithms for Numerical Continuation of Equivariant Systems

Completed

Post-Doc.

Research Associate Daniel Karls (with E. Tadmor) 2016—2022
Research Associate Yaser Afshar (with E. Tadmor) 2019—2021
Post-Doc. Amartya Sankar Banerjee (with R. James) 2014—2015
Post-Doc. Christelle Combescure 2013—2014
Post-Doc. Valeriu Smirichinski (with E. Tadmor) 2010—2012

Post-Doc. Dipta Ghosh (with M. Cococcioni) 2008—2010
Post-Doc. Tsvetanka Sendova (with E. Tadmor) 2008—2010
Post-Doc. Viacheslav Sorkin (with E. Tadmor) 2006—2008
Post-Doc. Kaushik Dayal (with R. James) 2006—2007

Ph.D.

Ph.D. Subrahmanyam Pattamatta 2016
Equilibrium Maps: Characterizing the complex and stochastic behavior of nanosystems subjected to proportional loading (with E. Tadmor)

Ph.D. Daniel Karls 2016
Transferability of Empirical Potentials and the Knowledgebase of Interatomic Models (KIM) (with E. Tadmor)

Ph.D. Amartya Sankar Banerjee 2013
Density Functional Methods for Objective Structures: Theory and Simulation Schemes (with R. James)

Ph.D. Vincent Jusuf 2012
A New Framework for the Interpretation of Modulated Martensites in Shape-Memory Alloys

Ph.D. Venkata Suresh Guthikonda 2010
Thermodynamic modeling of martensitic phase transformations in shape memory alloys

M.S.

M.S. Andrew Akerson 2018
Bifurcation Cascade Leading to Deformation Localization in graded elastomer strips

M.S. Krishanu Sen (coursework only) 2017

M.S. Karthikreddy Ginnavaram (coursework only) 2012

M.S. Vincent Jusuf 2010
Algorithms for Branch-Following and Critical Point Identification in the Presence of Symmetry

M.S. Venkata Suresh Guthikonda 2007
Effective Morse interaction potentials for modeling lattice-level instabilities in shape memory alloys

Undergraduate Students

Current

Completed

Vedanth Jonnalagadda (Edina HS)	2021—2023
Zixin Chen	2022
Emma Zeller	2020—2021
Thomas Kagan	2019—2020
Lincoln Priebe	2018
Geoffrey Magda (Ecole Polytechnique Intern)	2019
John Spear	2015—2018
Tin Nguyen	2017
Andrew Akerson	2016
Bastien Lauras (Ecole Polytechnique Intern)	2016
George Thome	2015
Zach Fox	2014
Pierre Henry (Ecole Polytechnique Intern)	2012
Daniel Gerbig (with E. Tadmor)	2011
Daniel Karls	2009
Vincent Jusuf	2007

Professional Membership

American Society of Mechanical Engineers (ASME)
Society for Industrial and Applied Mathematics (SIAM)
Society for Engineering Science (SES)

Professional Service Activities

Editorships

Journal of Elasticity (Chief Ed., 85th Birthday Vol. for Roger Fosdick)	2022-2023
International Journal of Solids and Structures (Board of Editors)	2017—Present
Journal of Elasticity (Board of Editors)	2015—Present
Knowledgebase of Interatomic Models (Technical Lead)	2018—Present
Knowledgebase of Interatomic Models (Editor)	2012—2018

ASME Technical Committee Service

Applied Mechanics Division Technical Committee (Chair) 2013—Present
Committee on Instabilities in Solids and Structures
Applied Mechanics Division Technical Committee (Member) 2009—Present
Committee on Instabilities in Solids and Structures

Conference and Workshop Organizing Committee Service

NIST Workshop on Atomistic Simulations for Industrial Need 2020
Virtual (online)
Organizing Committee member

International Conference on Martensitic Transformations (ICOMAT) 2017
Evanston, IL, USA
Local Organizing Committee member; Steering Committee member

NSF Workshops on the Rise of Data in Materials Research 2016, ’15
College Park, MD, USA and Nashville, TN, USA
Co-Organizer (with E.B. Tadmor)

KIM Content Carnivals 2014, ’12
College Park, MD; Singapore; Aachen, Germany; Minneapolis, MN
Co-Organizer (with E.B. Tadmor)

KIM Inaugural Meeting 2011
San Diego, CA, USA
Co-Organizer (with E.B. Tadmor and J.P. Sethna)

International Conference on Martensitic Transformations (ICOMAT) 2008
Santa Fe, NM, USA
USA Organizing Committee member

Conference Symposium/Session Organization

ASME IMEC&E (25—30 presentations yearly) 2023 —’12; ’09
Society of Engineering Science 2017; ’16; ’13
PACAM 2015; ’13
LAMMPS Workshop 2019; ‘15
ASME McMat 2015
USNCTAM 2018, ’14
KIM API Bootcamp (with E. Tadmor) Aug 2014; Feb. ’12

Fellowship Selection Committee Membership

U.S. D.O.E. Computational Science Graduate Fellowship 2011
Selection Committee (approx. 90 hours evaluating 130 applications)

U.S. D.O.E. Computational Science Graduate Fellowship 2019—’16; ’12; ’10; ’09
Application Screening Committee (approx. 15 hours/year)

Journal Referee

Journal of the Mechanics and Physics of Solids • Journal of Elasticity • International journal of Solids and Structures • Journal of Applied Mechanics • Nano Letters • Journal of Statistical Physics • Modeling and Simulation in Materials Science and Engineering • European Physical Journal B • Proceedings of the Royal Society A • Thin-Walled Structures • Computational Materials Science • Journal of Fracture • Continuum Mechanics and Thermodynamics • Smart Materials and Structures • Metallurgical and Materials Transactions A • Mechanics of Materials • Journal of Engineering Materials

and Technology • International conference on Martensitic Transformations (2008)
Journal of Communications in Nonlinear Science and Numerical Simulation

Proposal Review Panels

NSF CMMI 2018 • NSF ENG 2017 • NSF CMMI 2015 • NSF DMR 2007 •
NSF CMS 2006

Proposal Review

Israel Science Foundation 2012

Community Service

Scientific Judge, Reginal Science Bowl 2015
Judge, State Science Fair 2012—2005

U. Minnesota Service Activities

University-wide

Intercollegiate Athletics Committee 2022—Present
Faculty Senate (Rep. for College of Science and Engineering) 2019—Present
Astronaut Scholarship Foundation UMN Selection Committee 2014—Present
Doctoral Dissertation Fellowship Committee 2012—2014

AEM Department

Directory of Graduate Studies 2020—Present
Oversee and coordinate graduate student program

Undergraduate Advisor 2014—2019
Yearly review and advising of AEM students on their degree course work requirements

Aerospace Structures & Advanced Materials Search Committee (Chair) 2021-2022
Experimental Mechanics Faculty Search 2020-2021
Aerospace Structures & Advanced Materials Search Committee (Chair) 2018-2020
Systems Faculty Search Committee 2016—2017
Webpage Redesign Committee 2017—2019
Dept. Head Review Committee 2016
Dept. Head Search Committee 2013
Regular AEM Department Committees
Continuum and Solid Mechanics Courses Committee; Graduate Admissions and Fellowships/Scholarships Committee; AEM Colloquia and Seminars Committee

Student M.S. and Ph.D. Committee Memberships: 86

Christelle Combescure
Chercheur associé
Laboratoire IRDL
christelle.combescure@univ-ubs.fr

Objet : Lettre présentant collaboration recherche Ryan S. Elliott

Lorient, le 20 Juillet 2023

Madame, Monsieur,

Je sollicite par cette lettre la subvention de professeur invité pour la venue du Professeur Ryan S. Elliott au laboratoire IRDL pour une durée de 4 jours afin de continuer notre collaboration de recherche. La subvention sera utilisée pour financer le billet de train Paris-Lorient ainsi que les repas du professeur invité, ses billets d'avions aller-retour avec les Etats-Unis étant pris en charge par l'école doctorale de Rachel Azulay qui soutient sa thèse le 18 septembre 2023 et dont le Professeur Elliott est rapporteur.
Le Professeur Elliott, professeur du département Aerospace Engineering and Mechanics de l'Université du Minnesota, m'a accueillie en post-doctorat pendant une année en 2013 sur les sujets du calcul des instabilités dans les nids d'abeilles à l'aide d'outils de la théorie des groupes. Ces travaux ont été la source de ce qui fait aujourd'hui ma thématique principale de recherche.
L'expertise reconnue du Professeur Elliott dans les techniques numériques et théoriques de suivi des branches de bifurcations mais également dans l'étude de systèmes à très grand nombre de symétries intéresse un certain nombre de collègues du laboratoire que ce soit au PTR5 ou au PTR3. Il est prévu que sa venue s'accompagne d'un séminaire interne à ces deux pôles thématiques pour permettre les échanges avec les chercheurs concernés. Par ailleurs, sa venue fera suite à la soutenance de thèse de Rachel Azulay, doctorante au PIMM, que je co-encadre. Un temps de réflexion entre nous sur la suite à donner aux travaux très innovants de cette thèse est souhaitable et nous allons également étudier la possibilité de soumettre un projet commun international type ANR PRCI. Pour finir, nous avons, avec le Professeur Elliott, un article en fin de rédaction que sa visite pourrait nous aider à conclure.

Dans l'espoir que ces éléments vous aideront dans votre prise de décision.

Christelle Combescure

UNIVERSITY OF MINNESOTA

Twin Cities Campus

Department of Aerospace Engineering and Mechanics

College of Science and Engineering

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E-mail : aem-dept@umn.edu
Website : www.cse.umn.edu/aem

July 19, 2023

Dear Professor Christelle Combescure:

With this letter I would like to document our common research interests and my intent to collaborate with you in these areas.

My expertise is in the area of stability and bifurcation of structures and solid materials systems. I have applied this expertise to both continuum and discrete systems at many length- and time-scales. My work ranges from the study of Martensitic phase transformation at the level of individual atoms to the simulation of the formation of creases and kinks in human-scale systems such as biological tissues and rail-road tracks. I have a particular interest in systems which possess a large degree of symmetry where the advanced applied mathematics techniques of Group Theory and Equivariant Bifurcation Theory are necessary. I have applied these techniques in much of my work, but they are most applicable in the rapidly emerging and expanding field of Architected Materials.

It is this last topic where we have previously intersected and where our research interests continue to overlap. I have been impressed with the work you and your students have been performing on the identification of buckling patterns in Architected Materials. I look forward to discussing this further and to developing an extended collaboration between our research groups on this and other adjacent topics of current engineering and science interest. I believe this would most readily be facilitated through a series of mutual visits and exchanges between our groups.

Sincerely,

Ryan S. Elliott, Ph.D.
Professor & Director of Graduate Studies
Direct Phone: (612) 624-2376
Email: relliott@umn.edu
Web: https://z.umn.edu/relliott
OpenPGP Public key: https://z.umn.edu/relliott_asc (576D4997C4D51D92)

Université Bretagne Sud

DÉLIBÉRATION
du Conseil d'Administration de l'Université de Bretagne-Sud

SÉANCE du 09 décembre 2016

Délibération n° 128-2016

Le conseil d'administration approuve à l'unanimité la mise en place d'un dispositif d'accueil de courts séjours d'enseignants chercheurs invités étrangers (de 7 jours minimum à 21 jours maximum) et la prise en charge de frais de missions relatifs à cet accueil, selon les modalités définies ci-dessous :

- Frais de déplacements entre la résidence administrative d'origine et le laboratoire d'accueil de l'Université Bretagne Sud, pour un montant maximal de 500 € durant la période d'accueil, aux frais réels, sur présentation de facture ;
- Frais d'hébergement pour un montant forfaitaire maximal journalier de 110 € durant la période d'accueil sur présentation de facture ;
- Frais de restauration, pour un montant forfaitaire journalier de 40 € durant la période d'accueil.

Membres en exercice :		**30**
Membres présents ou représentés :		**23**
Suffrages exprimés :		**23**
•	Pour :	23
•	Contre :	0
Abstention(s) :		**0**

Délibération adoptée.

Visa du Président

Jean PEETERS

Document(s) en annexe au présent extrait :
Extrait transmis au Recteur, Chancelier des Universités le : 19 décembre 2016

Document mis en ligne le : 19 décembre 2016