

# ANI P. VELO

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## PROFESSIONAL EXPERIENCE

- Sept. 2016 - Present    **Professor**, Department of Mathematics
- Sept. 2012 - 2016    **Professor**, Department of Mathematics and Computer Science
- Sept. 2006 - 2012    **Associate Professor**, Department of Mathematics and Computer Science
- Sept. 2002 - 2006    **Assistant Professor**, Department of Mathematics and Computer Science  
University of San Diego (USD), San Diego, California
- 2002 - Present    **Research Collaborator**, Army Research Laboratory (ARL)  
Aberdeen Proving Ground, Maryland
- Sept. 2000 - 2002    **Davies Fellow**, The National Research Council, Washington D.C.  
**Assistant Professor**, Mathematical Sciences Department  
United States Military Academy (USMA), West Point, New York  
**Postdoctoral Davies Fellow**, ARL, Aberdeen Proving Ground, Maryland
- April 2001 - 2002    **Research Consultant**, General Technical Services, LLC  
Wall Township, New Jersey
- Summer 1997    **Research Assistant**  
Eastman Kodak Research Labs, Rochester, New York
- 1994 - May 2000    Mathematical Sciences Department, WPI, Worcester, Massachusetts

## EDUCATION

- May 2000    **Ph.D. in Mathematics**  
Worcester Polytechnic Institute (WPI), Worcester, Massachusetts  
Dissertation: *Optimal Design of Gradient Fields with Applications to Electrostatics*
- December 1993    **Graduated with Excellence in Mathematics**  
*Top of the graduating class – five year advanced mathematics program*  
University of Tirana, Tirana, Albania
- 1993    **Tempus Project Scholar**  
Rechenzentrum (Computer Center), University of Siegen, Siegen, Germany  
Diploma Thesis: *Computer Software Tools for the Support of Statistical Evaluation Methods*

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## RESEARCH AND PUBLICATIONS

### Research Journal Publications

1. Gazonas, G.A. and Velo, A.P., *Applications of the linear impulse-momentum law to longitudinal impact*, in preparation for publication
2. Velo, A.P., Gazonas, G.A. and Dickson, E.\* , *Matrix classification for impact problems in layered elastic media*, Journal of Mathematical Physics, Volume 66, Issue 8, (2025)
3. Velo, A.P. and Gazonas, G.A., *Applications of z-Transforms to Impact Problems in Elastic Layered Media*, Archive of Applied Mechanics, Volume 89, Number 3, Springer (2019), pg. 581-590
4. Gazonas, G.A., Velo, A.P. and Wildman, R., *Asymptotic impact behavior of Goupillaud-type layered elastic media*, International Journal of Solids and Structures 96 (2016), pg. 38-47
5. Gazonas, G.A., Scheidler, M.J. and Velo, A.P., *Exact analytical solutions for elastodynamic impact*, International Journal of Solids and Structures 75-76, (2015), pg. 172-187
6. Gazonas, G.A. and Velo, A.P., *Analytical solutions for the resonance response of Goupillaud-type elastic media using z-transform methods*, Wave Motion, Volume 49, Issue 1, (2012), pg. 135-151
7. Velo, A.P., Gazonas, G.A., and Ameya T.\* , *z-Transform methods for the optimal design of one-dimensional layered elastic media*, SIAM Journal on Applied Mathematics, Vol. 70, No.3, (2009), pg. 762-788
8. Velo, A.P., Gazonas, G.A., Bruder, E.\* , and Rodriguez, N.\* , *Recursive dispersion relations in one-dimensional periodic elastic media*, SIAM Journal on Applied Mathematics, Vol. 69, No. 3, (2008), pg. 670-689
9. Velo, A.P. and Gazonas, G.A., *Stress wave propagation and optimal design of a two-layered elastic strip subjected to transient loading*, International Journal of Solids and Structures 40, (2003), pg. 6417-6428  
Article featured in the book "*Civil Engineering Computations Tools and Techniques*", Chapter 16: *Analysis and Optimal Design of Multilayer Structure Subjected to Impulse Loading*, by Aref, A.J., Luo, X., and Dargush, G.F., Saxe-Coburg Publications, United Kingdom, (2007)

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\* Former Student Co-author

Emma Dickson – Fletcher Jones 2019 Summer Scholar, USD Law School student (2025)

Nancy Rodriguez – Faculty member, University of Colorado Boulder (2020), Ph.D. in Applied Mathematics from UCLA (2011), Post-Doctoral Fellowship at Stanford University. The first USD McNair Scholar to receive a Ph.D.

Erwin Bruder – Lt. Colonel, French Army, The Young Leaders 2019 Program selected by the French-American Foundation, Former Cadet of France's elite Saint-Cyr Military Academy

Takanobu Ameya – Japanese Government official in the Nuclear Energy Division (2013), Diplomat with the Japanese Ministry of Foreign Affairs (2007)

10. Lipton, R. and Velo, A.P., *Optimal design of gradient fields with applications to electrostatics*, Nonlinear partial differential equations and their applications, College de France Seminar, Volume XIV, Elsevier Science B.V., (2002), pg. 509-532

### Conference Proceedings

11. Ani P. Velo and George A. Gazonas, *Identifying stress behavioral patterns in impact problems through z-transforms*, paper # 579, The 24th International Congress on Sound and Vibration (ICSV26) Technical Programme and Congress Proceedings, Montreal, Canada, (2019)
12. A. Velo, G. Gazonas, A. Fouhy\* and J. Testerman\*, *Analytical methods for one-dimensional impact problems involving layered elastic media*, paper #411, ICSV24 Technical Programme and Congress Proceedings, London, United Kingdom, (2017)
13. George A. Gazonas, Mike J. Scheidler, Ani P. Velo, *A new class of exact analytical solutions for elastodynamic impact*, Advances in Numerical Methods for Linear and Non-linear Dynamics III Session, 11th World Congress on Computational Mechanics, Barcelona, Spain, (2014)
14. Gazonas, G.A. and Velo, A.P., *Resonance in m-layered Goupillaud-type Elastic Media*, Extended Abstracts--peer reviewed, Track 1: Phononic Crystals, Phononics 2011, International Conference on Phononic Crystals, Metamaterials, and Optomechanics, Santa Fe, New Mexico, pg.92-93, (2011)
15. Gazonas, G.A. and Velo, A.P., *On the optimal design of multilayered elastic media*, The 6<sup>th</sup> International Congress on Computational Mechanics Proceedings, Thessaloniki, Greece, (2008)
16. Velo, A.P. and Gazonas, G.A., *Optimal design patterns of Goupillaud type layered media*, The 8<sup>th</sup> Hellenic Society for Theoretical and Applied Mechanics (HSTAM) International Congress on Mechanics Proceedings, Patras, Greece, (2007)
17. Gazonas, G.A., Velo, A.P., and Weile D.S., *Optimal design of multilayered structures subjected to transient loading*, The 7<sup>th</sup> HSTAM National Congress on Mechanics Proceedings, Volume II, Technical University of Crete, (2004)
18. Velo, A.P., Gazonas, G.A., and Scheidler, M.J., *Homogeneous optimal design of a finite elastic strip subjected to transient loading*, 15<sup>th</sup> ASCE Engineering Mechanics Conference Proceedings, Columbia University, New York, (2002)
19. Velo, A.P., and Gazonas, G.A., *Optimal design of a two-layered elastic strip subjected to transient loading*, The 10th Annual ARL/USMA Technical Symposium Proceedings, APG, MD and USMA, West Point, NY, (2002)
20. Velo, A.P., Gazonas, G.A., and Scheidler, M.J., *Optimal design of a functionally graded elastic strip subjected to transient loading*, The 9th Annual ARL/USMA Technical Symposium Proceedings, APG, MD and USMA, West Point, NY, (2001)

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\* Student Co-author

21. Lipton, R. and Velo, A.P., *Design of functionally graded composite structures for control of stress*, Materials Research Society Proceedings, Boston, Massachusetts, (2001)
22. Chang, C., Gade, P., Lindsay, K., Schmidt, J., and Velo, A.P., *Modeling the magnetic properties of magnetorheological fluids*, Industrial Mathematics Modeling Workshop for Graduate Students Proceedings, North Carolina State University, North Carolina, CRSC-TR97-8 (1997)

### Publication Reports

23. Gazonas, G.A., Velo, A.P., Wildman, R.A., *Asymptotic impact behavior of Goupillaud-type layered elastic media*, ARL-RP-0574, (2016)
24. Gazonas, G.A., Scheidler, M.J., and Velo, A.P., *Exact analytical solutions for elastodynamic impact*, ARL-RP-0559, (2015)
25. Gazonas, G.A., and Velo, A.P., *Analytical solutions for the resonance response of Goupillaud-type elastic media using z-transform methods*, ARL-RP-353, (2012)
26. Gazonas, G.A. and Velo, A.P., *Resonance phenomena in Goupillaud-type media*, ARL-TR-5384, (2010)
27. Velo, A.P. and Gazonas, G.A., Ameya, T., *z-transform methods for the optimal design of one-dimensional layered elastic media*, ARL-RP-287, (2010)
28. Velo, A.P., Gazonas, G.A., Bruder, E., and Rodriguez, N., *Recursive dispersion relations in one-dimensional periodic elastic media*, ARL-RP-241, (2009)
29. Velo, A.P., and Gazonas, G.A., *Optimal design of a two-layered elastic strip subjected to transient loading*, ARL-RP-93, (2005)
30. Velo, A.P. and Gazonas, G.A., *Optimal design patterns in one-dimensional layered elastic media*, U.S. Army Faculty Research and Engineering Program (FREP) Technical Report, Chapel Hill, North Carolina, (2005)
31. Velo, A.P. and Gazonas, G.A., *Dispersion relations in one-dimensional elastic periodic media*, U.S. Army Faculty Research and Engineering Program (FREP) Technical Report, Chapel Hill, North Carolina, (2005)

### Directed Student Research

1. *Markov matrix applications in Goupillaud-type layered media*, Dickson, E, *Fletcher Jones Summer Scholar*, Summer 2019
2. *Review of crawling of worms model*, Based on "Crawling of Worms" by Keller and Falkovitz, *Journal of Theoretical Biology*, Volume 104, Issue 3, (1983), pg. 417-442  
Independent study project, Pratt, Q., Fall 2017

3. *An application of discrete dynamical systems to stress propagation in layered media*, Fouhy, A. and Testerman, J., senior project, USD, May 2016, 20 pages
4. *Applications of a mathematical model for HIV transmission dynamics of homosexual and bisexual men in San Diego County*, Allman, B. and Riethmiller, D., senior project, USD, May 2015, 24 pages
5. *A mathematical model of serotonin concentration*, Nederend, E., senior project, USD, May 2013 (co-advisor), 22 pages
6. *Laplace transform and stress propagation in one-dimensional layered piezoelectric media*, 2<sup>nd</sup> Lt. Ephritikhine, I., The Military Academy of Saint-Cyr, France, Dec. 2010, 103 pages
7. *Stress wave propagation in a multilayered strip subjected to a changing loading*, thesis project, 2<sup>nd</sup> Lt. Gerland, A., The Military Academy of Saint-Cyr, France, Dec. 2009, 93 pages
8. *Bandgap control in one-dimensional periodic elastic layered media*, thesis project, 2<sup>nd</sup> Lt. Audon, V., The Military Academy of Saint-Cyr, France, Dec. 2007, 80 pages. *The Best Thesis Project 2007-2008*, Mechanical Engineering Department, The Military Academy of Saint-Cyr, France
9. *Using Calculus of Variations to derive dispersion relations in one-dimensional periodic layered elastic media*, SURE research project, Yandell, P., USD, Summer 2007
10. *Minimizing temperature gradient of two-dimensional material designs using Calculus of Variations*, senior project, Deckard, C., USD, May 2007, 24 pages
11. *Variational methods to find dispersion relation in periodic layered media*, thesis project, 2<sup>nd</sup> Lt. Casanova, P., The Military Academy of Saint-Cyr, France, Dec. 2006, 50 pages
12. *Stress wave propagation along finite elastic strips of six-layers*, SURE research project, Yandell, P., USD, Summer 2006
13. *A direct generalization of an existing approach for deriving the dispersion relation in one-dimensional periodic layered elastic media*, senior project, Rodriguez, N., USD, May 2006, 57 pages
14. *An alternative method to derive dispersion relations in elastic periodic layered media*, thesis project, 2<sup>nd</sup> Lt. Bruder, E., The Military Academy of Saint-Cyr, France, Dec. 2005, 82 pages. *The Best Thesis Project 2005-2006*, Mechanical Engineering Department, The Military Academy of Saint-Cyr, France
15. *The effect of composites on the temperature gradient of two-dimensional material designs*, senior project, Ellefson, A., USD, May 2005, 34 pages
16. *Dispersion relations in one-dimensional elastic periodic media with low number of layered materials and symmetric cell configuration*, senior project, Mahiai, J., USD, May 2005, 24 pages

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17. *Optimal band structures of periodic layered media*, thesis project, 2<sup>nd</sup> Lt. Rispal, C., The Military Academy of Saint-Cyr, France, Dec. 2004
  18. *Displacement analysis on a three-layered elastic strip subjected to Heaviside loading*, McNair/SURE research project, Rodriguez, N., USD, Summer 2004
  19. *Applications of Laplace transform to wave propagation in layered media*, thesis project, 2<sup>nd</sup> Lt. Zimmermann, F., The Military Academy of Saint-Cyr, France, May 2004, 50 pages
  20. *The z-transform method and its applications to wave propagation in layered media*, senior project, Ameya, T., USD, May 2004, 41 pages
  21. *Stress wave propagation through non-Goupillaud type elastic layered media*, senior project, Plakalovic, D., USD, May 2004, 25 pages
  22. *Determining the offensive value of a major league baseball player, using linear regression analysis and bootstrap*, senior project, Carney, A., USD, May 2004 (co-advisor), 46 pages
  23. *Optimal design of three-layered elastic media of Goupillaud-type*, SURE research project, Davis, T., USD, Summer 2003. *SURE Program Honorable Mention Award*
  24. *Stress wave propagation in Goupillaud-type elastic layered media*, thesis project, 2<sup>nd</sup> Lt. Debaecker, T., The Military Academy of Saint-Cyr, France, May 2003, 37 pages
  25. *Mathematics behind composite materials*, thesis project, 2<sup>nd</sup> Lt. Ottavi, A., The Military Academy of Saint-Cyr, France, May 2002, 37 pages

## TEACHING EXPERIENCE

2000 - Present	<b>Course Instructor:</b>
2020 -	Applied Mathematics for Science and Engineering II (Math 311)
2010 -	Applied Mathematics for Science and Engineering I (Math 310)
Spring 2021 -	Business Calculus (Math 294 – special topics course, Math 133) <i>Designed and implemented the course.</i> Included new and more relevant business topics and applications into the course content, addressing the recommendations of the external reviewers of USD mathematics program and Knauss School of Business.
Spring 2025	Forum (Math 444)
Spring 2005 - 2024	Investigations in Modern Mathematics (Math 110/112)
2018, 2020	Linear Algebra (Math 320)

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2003 - 2007, 2019	Mathematical Problem Solving Seminar (Math 395) <i>Initiated and developed the course</i>
Fall 2003 - 2019	Calculus I (Math 150), Calculus II (Math 151)
Spring 2017, Fall 2017	Independent Study (Math 499)
2004 - 2007, 2013 - 2016	Senior Seminar (Math 495/496) <i>Initiated and developed the course</i>
2003-2008, 2016	Mathematical Modeling (Math 445) <i>Initiated and developed the course</i>
Fall 2002, 2008 - 2015	Survey of Calculus (Math 130)
Fall 2011	Ordinary Differential Equations (Math 330)
Fall 2005 - 2007	Logic for Mathematics and Computer Science (Math 160)
Spring 2002	Numerical Methods for Differential Equations (MA 396)
Spring 2001	Single Variable Calculus and Introduction to Differential Equations (MA 103)

## GRANTS AND FELLOWSHIPS

	<b>Sponsored Professional Travels</b>
2019, 2025	International Opportunity Travel Grant, International Affairs, USD
2017	The Dean's Office of the College of Arts & Sciences (CAS), USD
2001 - 2017	The Siemens Foundation ( <i>annually</i> )
2003 - 2015	The National Academies, Washington D.C. ( <i>annually</i> )
2003 - 2008	The Military Academy of Saint-Cyr, France ( <i>annually</i> )
Spring 2025	<b>Teaching and Learning Grant</b> , USD
Spring 2020	<b>Center for Education Excellence Remote Teaching Fund</b> (Spring 2020), USD
	<b>Putnam Mathematical Competition Organizer</b> , Sponsored Event
December 2021	Co-organizer
February 2021	<i>Virtual Event</i>
Fall 2018, 2019	<i>The Fletcher Jones Foundation</i>
Fall 2002-2015	<i>Enhanced Student-Faculty Interaction Initiative Fund Awards</i> , USD
Summer 2013 - 2014	<b>Principal Investigator</b> . Contract No. W911NF – 11 – D – 0001, \$50,000 <i>U.S. Army Research Office Scientific Services Program</i> Chapel Hill, North Carolina

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- Summer 2008 - 2009    **Principal Investigator.** Contract No. W911NF – 07 – D – 0001, \$50,000  
*U.S. Army Research Office Scientific Services Program*  
 Chapel Hill, North Carolina
- 2003 - 2011            **Principal Investigator.** *Cadet Thesis Project Grant, \$75,000*  
 The Military Academy of Saint-Cyr, France  
*The first sponsored program at USD funded by an international institution*  
 Diploma Thesis in Applied Mathematics and Engineering  
 Thesis Advisor and Thesis Defense Committee Member
- Summer 2004 - 2005    **Principal Investigator**  
*U.S. Army Faculty Research and Engineering Program (FREP)*  
 Chapel Hill, North Carolina
- Fall 2010                **Faculty Research Grant (FRG), USD**
- Summer 2003 - 2007    **SURE/McNair Faculty Grant**  
 Summer Undergraduate Research Advising, USD
- 2000 - 2002            **Davies Fellowship,** The National Research Council, Washington D.C.
- 2001 - 2002            **Project New Experience in Teaching (NExT) Fellowship**  
 Mathematical Association of America
- Summer 2002           **Park City Mathematics Institute (PCMI), Utah**
- 1999 - 2000            **Arvid and Marietta Anderson Fellowship,** WPI, Worcester, Massachusetts
- 1993                     **Tempus Project Study Abroad Scholarship,** European Community

## *HONORS AND AWARDS*

- November 29, 2022    **Certificate of Recognition in Grateful Appreciation for 20 years of Service,** USD
- June 12, 2020        Featured in **Intellectual Brand Albania**  
<https://www.facebook.com/ibalbania/videos/280925626612497/>
- October 24, 2017    **Certificate in Recognition of Outstanding Scholarship, Leadership and Service**  
 USD Mortar Board, Alcala Chapter
- September 1, 2017    **Certificate of Recognition in Grateful Appreciation for 15 years of Service,** USD
- October 2011         **Certificate of Recognition for Outstanding Service as a Competition Judge**  
 Siemens Foundation, Princeton, New Jersey
- December 5, 2008    **Woman of Impact Certificate of Appreciation,** Women's Center, USD

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October 2005	<b>Certificate of Recognition for Outstanding Service as a Competition Judge</b> Siemens Foundation, Princeton, New Jersey
January 2004	<b>USD Presidential Acknowledgement Certificate for Contributions during Firestorm 2003</b>
August 2002	<b>Commander's Award for Public Service</b> U.S. Department of the Army, Washington D.C.
April 2002	<b>Certificate of Appreciation for Outstanding Volunteer Service</b> USMA, West Point, New York

## CONFERENCE AND SEMINAR PRESENTATIONS

62. *Markov and signed Markov matrices for impact problems in layered elastic media*, Applications of Linear Algebra (ALA) International Conference, Novi Sad, Serbia, July 5, 2025
61. *Constructing Markov and signed Markov matrices in the context of a physical application*, Symposia 1, Engineering 1, AAAS-PD (American Association for the Advancement of Science – Pacific Division) Conference, USD, June 19, 2024
60. *System matrix classification in layered media impact problems*, CP27 Nonlinear Waves and Instabilities, SIAM Conference on Applications of Dynamical Systems (DS23), Portland, Oregon, May 18, 2023, *session chair and presenter*
59. *Longitudinal impact into functionally graded media*, The 8th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS Congress 2022, Oslo, Norway, June 2022, *co-author/presenter Gazonas, G.A.*
58. *Markov matrix applications in Goupillaud-type layered media*, Department of Mathematics Seminar Series, USD, November 22, 2019, *co-presenter with research advisee Dickson, E.*
57. *Identifying stress behavioral patterns in impact problems through z-transforms*, presenter and leading author, T05 SS01 Wave Propagation in Complex Media, 26th Congress on Sound and Vibration, Montreal, Canada, July 8, 2019
56. *Analytical methods for one-dimensional impact problems involving layered elastic media*, presenter and co-author, T05 SS1 Wave Propagation Application in Fluids, Complex Solids and Structures, The 24<sup>th</sup> International Congress on Sound and Vibration, London, United Kingdom, July 26, 2017
55. *Chasing waves in a Goupillaud medium. Impact problems*. Department of Mathematics Seminar Series, USD, April 27, 2017
54. *On one-dimensional impact problems involving Goupillaud-type layered elastic media*, Bridging Scales: Homogenization and Related Topics in Solid Mechanics and Crystal Plasticity Symposium, International Symposium on Plasticity, Puerto Vallarta (Mexico), January 2017

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53. *Asymptotic impact behavior of Goupillaud-type layered elastic media*, European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2016), Crete, Greece, July 2016, *co-author/presenter Gazonas, G.A.*
  52. *Analytical results for stress and particle velocity on impact problems in elastic layered media*, SIAM PD15 Conference, CP11, Scottsdale, Arizona, December 10, 2015, *session chair and presenter*
  51. *Longitudinal impact into piezoelectric media*, The 5th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 25–27 May 2015, Crete, Greece, *co-author/presenter Gazonas, G.A.*
  50. *Modeling stress wave propagation in one-dimensional Goupillaud-type layered elastic media*, PDEs/Number Theory Session, Second Annual Twin WiMSoCal conference, USD, May 4, 2014
  49. *A new class of exact analytical solutions for elastodynamic impact*, Advances in Numerical Methods for Linear and Non-linear Dynamics III Session, The 11th World Congress on Computational Mechanics, Barcelona, Spain, July 23, 2014, *co-author/presenter Gazonas, G.A.*
  48. *Impact problems in one-dimensional Goupillaud-type layered elastic media*, ASME 2013 International Mechanical Engineering Congress & Exposition Acoustic and Elastic Wave Propagation II, San Diego, CA, November 20, 2013
  47. *A new class of exact analytical solutions for one-dimensional impact problems*, Advances in Numerical Methods for Linear and Non-Linear Dynamics Symposium, the 12th U.S. National Congress on Computational Mechanics (USNCCM12), Raleigh, North Carolina, July 22-25, 2013, *co-author/presenter Gazonas, G.A.*
  46. *Stress wave propagation in one-dimensional Goupillaud-type layered elastic media with applications to optimization, resonance and impact problems*, 2013 Joint Mathematics Meetings (JMM) Special Session on Nonlinear Evolution Equations and Integrable Systems, January 9, 2013
  45. *Bandgap formation in Goupillaud-type layered elastic media*, Phonic Crystals and Acoustic Metamaterials Symposium, ASME2012 International Mechanical Engineering Congress, Houston, Texas, November 14, 2012, *co-author/presenter Gazonas, G.A.*
  44. *Analytical and computational study of one-dimensional impact into randomly layered elastic media*, International Workshop on Computational Mechanics of Materials. IWCMXXII, Baltimore, Maryland, September 26, 2012, *co-author/presenter Gazonas, G.A.*
  43. *Analytical and computational study of one-dimensional impact into Goupillaud-type layered elastic solids*, The 10<sup>th</sup> World Congress on Computational Mechanics (WCCM10), Sao Paulo, Brazil, 20–25 July 2012, *co-author/presenter Gazonas, G.A.*

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42. *Optimal design, resonance and bandgap formation in Goupillaud-type media*, Institute of Applied Mathematics and Computational Science (IAMCS) Speaker Seminar Series, Department of Mathematics, Texas A&M University, College Station, Texas, April 24, 2012, *co-author/presenter Gazonas, G.A.*
  41. *On the natural frequencies of a free/free Goupillaud-type elastic strip*, 2011 SIAM Conference on Analysis of Partial Differential Equations, Symposium on Geometric Approaches for Eigenvalue and Stability Problems, San Diego, CA, November 16, 2011
  40. *Resonance in layered Goupillaud-type elastic media*, Phononics 2011 International Conference on Phononic Crystals, Metamaterials, and Optomechanics, Phononic Crystals Session 4, Santa Fe, New Mexico, May 30, 2011, *co-author/presenter Gazonas, G.A.*
  39. *z-Transform methods for the optimal design and resonance frequencies of a finite layered elastic strip*, Computational Science Research Center and Aerospace Engineering and Mechanics Seminar Series, San Diego State University, San Diego, California, March 25, 2011
  38. *z-Transform methods for the resonance frequencies of multilayered elastic media*, ASME 2010 International Congress, Symposium on General Structural Vibration and Acoustics, Session 20-1-3, Vibro-acoustic modeling techniques, Vancouver, Canada, November 15, 2010
  37. *z-transforms and the optimal design of Goupillaud type layered elastic media*, The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Session FA14--*Material Response to Shock Loading*, Blacksburg, Virginia, June 26, 2009, *co-author/presenter Gazonas, G.A.*
  36. *On the optimal design of Goupillaud type layered elastic media*, Society for Engineering Sciences, 45th Annual Meeting, Champaign, Illinois, October 13, 2008, *co-author/presenter Gazonas, G.A.*
  35. *On the optimal design of multilayered elastic media*, The 6<sup>th</sup> International Congress on Computational Mechanics, Thessaloniki, Greece, June 2008, *co-author/presenter Gazonas, G.A.*
  34. *Dispersion relations in one-dimensional periodic elastic media*, American Society of Mechanical Engineers (ASME) Track 5: Electronics and Photonics, Symposium on Multiphysics Issues in Electronics/Photonic Packaging, Session III, Seattle, International Congress and Exposition, Seattle, Washington, November 12, 2007
  33. *Optimal design of Goupillaud type layered media*, Hellenic Society for Theoretical and Applied Mechanics (HSTAM), 8<sup>th</sup> International Congress on Mechanics Proceedings, Patras, Greece, July 2007, *co-author/presenter Gazonas, G.A.*
  32. *Stress optimality results for a Goupillaud-type elastic strip*, The 19th International Symposium on Mathematical Programming (ISMP), TU2-R9: Global Optimization Techniques II, Rio de Janeiro, Brazil, August 1, 2006
  31. Department of Mathematics and Computer Science Seminar Series, USD, March 2006

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30. *Analytical optimality results for a layered elastic strip subjected to transient loading*, The Research Laboratory for Numerical Modeling and Simulations Seminar Series, Université de Provence, Aix-Marseille I, France, January 2006
  29. Math and Engineering Overnight Program, USD, November 2005
  28. *Optimal design patterns in one-dimensional elastic media with a low number of layers*, The Seventeenth Triennial Conference of the International Federation of Operational Research Societies (IFORS), Session RB-04 Optimization Techniques II, Honolulu, Hawaii, July 2005
  27. Mathematics behind Poker, USD Poker Tournament, Mission Crossroads, Sept. 2005
  26. *Optimal design of multilayered structures subjected to transient loading*, Hellenic Society for Theoretical and Applied Mechanics (HSTAM), 7<sup>th</sup> National Congress on Mechanics, Session B.7 Structural Optimization II, Technical University of Crete, June 2004, *co-author/presenter Gazonas, G.A.*
  25. *Optimal design of layered elastic media subjected to transient loading*, The Third International Conference on Computational Modeling and Simulation of Materials, Thin/Thick Films, Layered Structures and Surface Processing Section, Acireale, Italy, June 2004
  24. Resident Faculty Seminar Series, Wisdom for the Real World Residence Life Program, Manchester Village, USD, February 2004
  23. *Can you control stress?* The USD Science Lecture Series, UC Forum B, December 3, 2003
  22. Faculty and Curriculum Development Programs: Women's Faculty Research Dinner, USD, March 2003
  21. Institute for Operations Research and Management Sciences (INFORMS) 2002 Meeting, San Jose, California, November 2002, *session chair and presenter*
  20. *Optimal design of a two-layered elastic strip subjected to transient loading*, Applied Mathematics Seminar Series, U.S. Naval Academy, Annapolis, Maryland, November 7, 2002
  19. The Tenth Annual ARL and USMA Technical Symposium, ARL, Aberdeen Proving Ground, Maryland, November 2002
  18. The Fourteenth US National Congress of Theoretical and Applied Mechanics, Virginia Tech, Blacksburg, Virginia, June 2002
  17. *Homogeneous optimal design of a finite elastic strip subjected to transient loading*, Mechanics of Materials with Microstructure Symposium, The Fifteenth ASCE Engineering Mechanics Conference, Columbia University, New York, June 2-5, 2002
  16. *Optimal design of graded and multilayered structures subjected to transient loading*, NRC Associateship program briefing, ARL, APG, Maryland, March 27, 2002

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15. Military, Government and Aerospace Simulation Symposium, 2002 Advanced Simulation Technologies Conference, San Diego, California, April 2002
  14. AMS Special Session on Partial Differential Equations and their Applications, Joint Mathematics Meetings, San Diego, California, January 2002
  13. Young Mathematician's Network and Project NExT (New Experiences in Teaching) Poster Session, Joint Mathematics Meetings, San Diego, California, January 2002
  12. Faculty Development Seminar, Department of Mathematical Sciences, USMA, West Point, New York, September 2001
  11. The Ninth Annual ARL and USMA Technical Symposium, ARL, Aberdeen Proving Ground, Maryland, November 2001
  10. Composites Engineering Workshop, Department of Civil and Mechanical Engineering, USMA, West Point, New York, August 2001
  9. Composites Applications, Work Area Review, ARL, Aberdeen Proving Ground, Maryland, November 2000
  8. The Eighth Annual ARL and USMA Technical Symposium, ARL, Aberdeen Proving Ground, Maryland, November 2000
  7. International Congress of Theoretical and Applied Mechanics, Chicago, Illinois, August 2000
  6. International Conference on Scientific Computing and Mathematical Modeling, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin, May 2000
  5. Applied/Computational Mathematics Seminar, Mathematical Sciences Department, WPI, Worcester, Massachusetts, November 1999
  4. Aero/Thermo Fluid Seminar, Mechanical Engineering Department, WPI, Worcester, Massachusetts, October 1998
  3. SIAM Northeast Regional Mathematics in Industry Workshop, WPI, Worcester, Massachusetts, May 1998
  2. Computational Science Laboratory Colloquium, Eastman Kodak Research Labs, Rochester, New York, August 1997
  1. Industrial Mathematics Modeling Workshop for Graduate Students, Lord Corporation and Center for Research in Scientific Computation, North Carolina State University, Raleigh, North Carolina, August 1996

### Other Student/Advisee Presentations

- Creative Collaborations, USD, 2008, 2013-2016, *student poster presentations*
- Applied Mathematics Capstone Senior Project Presentation Day, *student oral presentations*, USD, May 2004-2007 and 2013-2016
- *Applications and development of a mathematic model for HIV transmission dynamics in San Diego County*, 2015 Annual Biomedical Research Conference for Minority Students (ABRCMS), Seattle, WA, November 2015, *poster presentation*, *Allman, B.*
- Society for the Advancement of Chicanos and Native Americans in the Sciences Conference, Texas, October 2004, *poster presentation*, *Rodriguez, N.*
- Young Mathematicians Conference 2004, The Ohio State University, Columbus, Ohio, August 2004, *Rodriguez, N.*
- 2004 UCSD Summer Research Conference, Mathematics and Engineering, Price Center, University of California, San Diego, California, August 2004, *Rodriguez, N.*
- The Fourteenth Annual USD Student Research and Internship Conference, USD, May 2004, *poster presentation*, *Davis, T., Honorable Mention*
- Young Mathematicians Conference 2003, The Ohio State University, Columbus, Ohio, August 2003, *Davis, T.*

## PROFESSIONAL SERVICE

### Outside USD

- **Panelist**  
Dec. 2025 - Jan. 2026 **National Defense Science and Engineering Graduate (NDSEG) Fellowship Program, Department of Defense**  
*Conduct evaluation of ~20 applications, including a summary assessment and rating*
- **Judge**  
Nov. - Dec. 2025 **Student Challenge Using Differential Equations Modeling (SCUDEM X)**  
Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations (SIMIODE)  
*Evaluate videos of three-student teams*
- **Co-Organizer, Mentor**  
2022 - 2024 **Mathematics Olympiads, Middle School Division (MOEMS)**  
School of the Madeleine, San Diego, California  
*Initiated and advertised the contest; created and posted documents*  
*Held 20+ preparatory one-hour meetings and administered five contests*  
*Outcome: 9 out of 23 students scored on the top 50%, and three on the top 10-25% of 100,000+ contestants in the US and 30+ other countries*

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- **Judge**  
2002, 2018, 2019

**Interdisciplinary Contest in Modeling (ICM)**  
The Consortium for Mathematics and its Applications (COMAP)  
*Evaluated ~12 student projects per year, 20 pages each*
  - **Contributor**  
  
February 5, 2019

**International Day of Women and Girls in Science**  
Forum to inspire and encourage females to contribute to STEM  
“Henrietta Leavitt” Foundation, Tirana, Albania  
Brief online article  
*Mathematics is the language with which God wrote the Universe*
  - **Guest Speaker**  
2014- 2017

**Mathematics Talks for Middle School students (annual event)**  
The Child’s Primary School (TCPS), San Diego, California
  - **Panelist Judge**  
  
2001 - 2017  
2008

**Siemens Westinghouse Math, Science and Technology Competition**  
Princeton, New Jersey  
*Reviewed annually 50-70 student research papers*  
*Lead Judge for Mathematics*
  - **Panelist**  
  
2003 - 2015

**National Research Council, Associateship Awards Program  
in Engineering, Applied Sciences and Mathematics, Washington D.C.**  
*Reviewed annually 20-25 research proposals for  
Postdoctoral and Senior Research Positions*
  - **Co-Chair**  
2007, 2008  
  
September 2008  
June 2007

**The Engineering and Mathematics Panel Board  
Research Associateship and Fellowship Programs Advisory Committee**  
The National Academies  
Arnold and Mabel Beckman Center, Irvine, California  
J. Erik Jonsson Center, Woods Hole, Massachusetts
  - **Reviewer**  
2010 - 2011

**Pearson Education, Calculus and Its Applications, 10e, (2012)**  
Bittinger, Ellenbogen, and Surgent  
*Reviewed mainly the new Chapters 5 and 6. My name and affiliation as  
a reviewer appear on the Preface of the textbook.*
  - **Reviewer**  
2003 - 2009

**Army Research Office**, Research Triangle Park, North Carolina  
*Reviewed proposals for Postdoctoral and Senior Research Positions*
  - **Reviewer**  
2007

**Journal of Integrative Neuroscience**  
*Manuscript review*
  - **Reviewer**  
2004 - 2005

**International Journal of Solids and Structures**  
*Manuscript review*
  - **Reviewer**  
2004

**U.S. Civilian Research and Development Foundation**  
Cooperative Grants Program, Arlington, Virginia

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**USD Service**

- Goldwater Committee Representative, 2024 – 2026
- University Senate
  - Alternate Senator, Fall 2024 – Spring 2025
  - Senator, 2005-2007
- Ad Hoc Committee for the ARRT External Evaluation of Scholarship, College of Arts and Sciences (CAS), Fall 2024 - Spring 2025
- Undergraduate Teaching and Learning Committee Member, CAS, Spring 2024
- Dean’s Advisory Council (DAC) on Appointment, Reappointment, Rank and Tenure (DACARRT-2.0), CAS, November 2022 - May 2023
- Budget Committee Member, CAS, 2019-2022
- *Ad hoc* Faculty Committee Member, ARRT Appeal, Provost Office, Sept. 2021
- ARRT Committee Member, CAS, Fall 2016-Spring 2018
- Graduate Studies Committee Member, CAS, 2009-2015
- Honorary Degrees Committee Member, 2005-2009
- Honors Program Member, 2003-2007
- Information Resources Council Member, 2006-2007
- Resident Faculty, Wisdom for the Real World Residence Life Program, Manchester Village, 2002-2006
- Faculty Focus Groups participant regarding the Design, Space Usage and Academic Vision of the new University Center Expansion, Summer 2005

**Department Service**

- Mathematics Department Liaison with Engineering, Fall 2024 – Spring 2026  
*Established a list of topics and standards for Math 310-311 courses, in collaboration with mathematics and engineering faculty, 2025*
- Business Calculus Coordinator, June 2020 – 2026  
*Served as the main resource and point of contact for the new Business Calculus course, including course design, approval, implementation, and enrollment matters. Organized working groups*
- Department Seminar Series Coordinator, 2004 – 2013, 2025 - 2026

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- Contributor to the Mathematics Department Program Review Report, 2025, 2018 - 2019
  - Departmental Committee for Faculty Promotion to Full Professor,
    - Co-Chair, *Prepared half of the committee letter*, Fall 2024
    - Chair, Fall 2020
  - Chair, Math 130 (Survey of Calculus) Redesign Committee with the Knauss School of Business, June 2020 – 2022
  - Chair, Department Emeritus Status Committee, Fall 2023  
*Collected, prepared and submitted all the needed documentation for the emeritus status application, including the nomination letter on behalf of the mathematics department*
  - Department Committee for Faculty Tenure and Promotion
    - Chair, 2019
    - Member 2019, 2021 - 2022, 2024
  - Math Department Hiring and Reappointment Committee Member, 2003 -
    - Cluster Hiring Subcommittee Member, 2021
  - Executive Assistant Search Committee Member, 2012, 2022
  - Applied Math Task Force, Fall 2021-Spring 2022
  - Mentor of New Faculty, Fall 2018 - 2020
  - Chair, The Tenure Review Committee for the Fletcher Jones Endowed Chair, Spring 2016
  - Applied Mathematics Program Coordinator, 2004 - 2007, 2013 - 2016
  - Chair, The Fletcher Jones Endowed Chair Hiring Committee, Summer 2014 - Spring 2015
  - Math Club Faculty Advisor, 2016 - 2017
  - Department Webmaster, 2004 - 2013
  - Undergraduate Research Conference/Creative Collaborations Board Member, 2014
  - SURE Review Committee, Department Representative, Spring 2005, 2011 - 2013
  - Assessment Committee Member, 2009 - 2011
  - Applied Mathematics Program Task Force, Fall 2007 - 2013
  - Department Task Force on Appointment Policies and Procedures, 2008
  - SURE Program Meetings, Department Representative, USD, 2003 - 2008

- Recruiting Committee Member, 2005 - 2007
- Contributor, The Math and Computer Science Festival for High School Students, 2004
- Contributor, The Department File for the Single Subject Credential Program, 2004
- Faculty Mentor, Mathematical Contest in Modeling (MCM), COMAP, 2002 - 2003
- Academic Advisor, 2005 -
- Professional Reference for Students, Faculty and Alumni in Mathematics, Computer Science and Engineering, 2004 -
- Department Representative at Student Recruiting Events and Various Campus Events, 2003 - *Torero Visiting Day, Academic Showcase, College Visiting Day, Discover myUSD Overnight, Merit Scholarship Overnight, Multicultural Experience Overnight, Honors Overnight, Student Convocation, Commencement Ceremonies, etc.*

### **Selected Professional Activities Organized**

- Department Seminar, guest speaker host:
  - Mark Levi, Penn State, regular columnist for SIAM news, April 9, 2026
  - Nancy Rodriguez, UCLA, USD Class of 2006, February 2, 2011
- Mathematical Olympiads for Elementary and Middle Schools (MOEMS), School of the Madeleine (SOM), San Diego, Fall 2022 – Spring 2024
- William Lowell Putnam Mathematical Competition, USD, 2002-2014, 2017, 2019, 2021
- Applied Math Capstone Senior Project Presentation Day, USD, May 2004 - 2007, 2013 - 2016
- The symposium "*Music and the Sciences: Synergies among musical arts, math, science, and engineering*", American Association for the Advancement of Science Pacific Division (AAAS PD), USD, June 14, 2011, *Co-organized with Schubert, T., Mechanical Engineering, USD*
- Tour of a Submarine, Mathematical Modeling (Math 445) field trip, San Diego, October 4, 2008
- Euler's 300th Birthday Celebration, USD, April 2007 (co-organizer)
- Faculty Meetings about the Applied Mathematics Program, USD, 2003 - 2006
- Student-Faculty Trip to Harvey Mudd College, Mathematics Conference on Scientific Computing, November 2005

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**Selected Professional Development Activities recently attended**

- Explore AI in Higher Ed Webinar, MAA, April 2025
- SIMIODE Conference, *arranged to attend with eleven USD math-majors*, March 14 - 16, 2025
- Mission Integration: *Lighting the Way Forward*, National Conference, USD 75<sup>th</sup> anniversary celebration event, January 11 - 13, 2024