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## **PUBLICATIONS (BOOKS, JOURNALS, BOOK CHAPTERS AND PROCEEDINGS)**

### **A. BOOKS (GRADUATE TEXTBOOK IN MATHEMATICS AND MATHEMATICS EDUCATION)**

1. *Classical and Modern Numerical Analysis: Theory Methods and Practice*, CRC Press, a Taylor & Francis Company, A. Ackleh, R. Kearfott, E. Allen and P. Seshaiyer (2009).
2. *Modeling Mathematics Ideas*, Rowmann & Littlefield Publishers, J. Suh and P. Seshaiyer (2016).

### **B. ARTICLES IN REFEREED AND PEER-REVIEWED JOURNALS**

#### **B.1 Computational Mathematics and Data Sciences**

1. "A four-field mixed finite element method for Biot's consolidation problems", Qi, W., Seshaiyer, P. and Wang, J., *Electronic Research Archive*, 29(3), 2517 (2021).
2. "Finite element method with the total stress variable for Biot's consolidation model, *Numerical Methods for Partial Differential Equations*, 37(3), 2409-2428 (2021).
3. "Mathematical modelling, analysis and simulation of the spread of gangs in interacting youth and adult populations. *Letters in Biomathematics*, "Rivera-Castro, M., Padmanabhan, P., Caiseda, C., Seshaiyer, P., & Boria-Guanill, C. 1-19 (2019).
4. "On parameter estimation approaches for predicting disease transmission through optimization, deep learning and statistical inference methods", Raissi, M., Ramezani, N., & Seshaiyer, P., *Letters in Biomathematics*, 1-26 (2019).
5. "Mathematical Modeling, Analysis, and Simulation of Tumor Dynamics with Drug Interventions", *Computational and mathematical methods in medicine*, Unni, P., & Seshaiyer, P. (2019).
6. "Application of local improvements to reduced-order models to sampling methods for nonlinear PDEs with noise", *Int. J. of Computer Mathematics*, M. Raissi and P. Seshaiyer, pp1-11, (2017).
7. "Implementation of the Parareal Algorithm to Optimize Nanoparticle Transport in Porous Media Simulations", *Int. J. of Comput. Methods*, A. Waghmare and P. Seshaiyer, 16(05), 1840001 (2019).
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9. "A multi-fidelity Stochastic Collocation method for parabolic PDEs with random input data", M. Raissi and P. Seshaiyer, *Int. J. for Uncertainty Quantification*, Vol 4: 225 –242 (2014).
10. "Computational Mechanics of a coupled flow-structure interaction problem with applications to bio-inspired micro air vehicles", *International Journal of Aerospace and Lightweight Structures*, R. Banerjee and P. Seshaiyer, Vol. 3(3): 399–407 (2013).
11. "Multilevel Non-conforming finite element methods for coupled fluid-structure interactions", E. Aulisa, S. Garcia, E. Swim and P. Seshaiyer, *International Journal of Numerical Analysis and Modeling, Series B*, Vol 3(3), pp 307-319 (2012).

12. "Multiphysics Modeling and Simulation of Fluid-Structure Interaction applied to biological problems", F. Mihai, I. Youn and P. Seshaiyer, *Proc. Computer Science*, Vol 9, pp 615-623 (2012).
13. "Transforming Practice Through Undergraduate Researchers," P. Seshaiyer, *Council on undergraduate research Quarterly*, 33(1), pp 8-13 (2012).
14. "Stability of Membrane Elastodynamics with applications to Cylindrical Aneurysms", A. Samuelson and P. Seshaiyer, *Journal of Applied Mathematics*, doi:10.1155/2011/906475 (2011).
15. "Stability analysis of inhomogeneous equilibrium for axially and transversely excited nonlinear beam", E. Kaya, E. Aulisa, A. Ibragimov and P. Seshaiyer, *Communications on Pure and Applied Analysis*, Vol 10(5), pp1447-1462 (2011).
16. "Distributed Computational Methods for Coupled Fluid Structure Thermal Interaction Applications", E. Aulisa, S. Manservisi, P. Seshaiyer, A. Idesman, *Journal of Algorithms and Computational Technology*, Vol 4(3), pp 291-310 (2010).
17. "A multilevel domain decomposition approach for studying coupled flow application", E. Aulisa, A. Cervone, S. Manservisi and P. Seshaiyer, *Comm. in Comput. Physics*, Vol 6, pp 319-341 (2009).
18. "Benchmark problems for wave propagation in elastic materials", A. Idesman, H. Samajder, E. Aulisa and P. Seshaiyer, *Computational Mechanics*, Vol 43(6), pp 797-814 (2009).
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22. "A multilevel domain decomposition approach for solving coupled applications in Computational Fluid Dynamics", E. Aulisa, S. Manservisi and P. Seshaiyer. *International Journal for Numerical Methods in Fluids*, 56(8): pages 1139-1145 (2008).
23. "A computational methodology to study coupled physical processes over partitioned domains", S. Franklin, P. Seshaiyer and P. Smith, *Applied Mathematical Modeling*, pp 632-646 (2007).
24. "A nonconforming finite element method for fluid-structure interaction problems", E. Swim and P. Seshaiyer, *Comp. Methods in Applied Mechanics and Engineering* Vol 195, pp 2088-2099 (2006).
25. "A computational multilevel approach for solving 2D Navier-Stokes equations over non-matching grids", E. Aulisa, S. Manservisi and P. Seshaiyer, *Computer Methods in Applied Mechanics and Engineering*, Vol 195, 4604-4616 (2006).
26. "A non-conforming computational methodology for modeling coupled problems", E. Aulisa, S. Manservisi and P. Seshaiyer, *Nonlinear Analysis*, Vol 63 (5-7), 1445-1454 (2005).
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29. "Frictional Study of Woven Fabric: Relationship Between Friction and Velocity of Testing", D. Hermann, S. S. Ramkumar, P. Seshaiyer and S. Parameswaran, *Journal of Applied Polymer Science*, Vol 92, pp 2420-2424 (2004).

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32. "Computational Modeling of geophysical systems", S. Davenport and P. Seshaiyer, Computational Science and Its Applications, *Lect. notes in Comp. Sci.*, V. Kumar et. al., 2667, pp 523-532 (2003).
33. "Non-conforming hp mortar finite element methods for Stokes problems", F. Ben Belgacem, L. K. Chilton and P. Seshaiyer, Recent Developments in Domain Decomposition Methods, *Lecture notes in Computational Science and Engineering*, Pavarino and Toselli (Eds.) 23, pp 133-146 (2002).
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35. "Non-conforming computational methods for mixed-elasticity problems", F. B. Belgacem, L. K. Chilton and P. Seshaiyer, *Computational Methods in Applied Math.*, Vol 3 (1), pp 1-12 (2003).
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37. "A non-conforming finite element method for submeshing", P. Seshaiyer and P. W. Smith, *Applied Mathematics and Computation*, Vol 139 (1), pp 85-100 (2003).
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## **B.2 Mathematical Biology, Epidemiology and Computational Biomechanics**

44. "When Triggers Become Tigers: Taming the Autonomic Nervous System via Sensory Support System Modulation", H. Matto, P. Seshaiyer, S. Carmack, N. Peixoto, M. Scherbel, *J. Soc. Social Work and Research*, Accepted (2021).
45. "Mathematical Modeling, Analysis, and Simulation of the COVID-19 Pandemic with Behavioral Patterns and Group Mixing", Ohajunwa, C.& Seshaiyer, P. (2021). SPORA, A Journal of Biomathematics, 7(1), 46-60.

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48. "A novel mobile biobehavioral regulation system for personalized trauma recovery support." Matto, H., Seshaiyer, P., Newcomb, A., Rothberg, S. & Lopez-Piper, A. *Patient Exp. J.* 6, 83–92 (2019).
49. "Rehabilitation Technology and Relapse-Detecting Software for Recovering Opioid Addiction Patients." Valencia, D., Johnson, K. J. K., Matto, H., & Seshaiyer, P. (2019). *Journal of Student-Scientists' Research*, 1.
50. "Mathematical analysis and simulation of a coupled non-linear fluid structure interaction model with applications to aneurysms", M. Badgaish, J.E. Lin and P. Seshaiyer, *Communications in Applied Analysis*, 22, No. 4 (2018), 637-661.
51. "Harnessing the power of the recovering brain to promote recovery commitment and reduce relapse risk", Matto, H., & Seshaiyer, P., *J. Soc. Social Work and Research*, 9(2), 341-358 (2018).
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53. "Mathematical modeling, analysis and simulation of the spread of Zika with influence of sexual transmission and preventive measures." Padmanabhan, P., P. Seshaiyer, and C. Castillo-Chavez, *Letters in Biomathematics* 4, no. 1 (2017): 148-166.
54. "Modeling, Computation and Simulation of Non-linear soft-tissue interaction with flow dynamics with applications to biological systems", *International Journal of Novel Ideas: Mathematics*, M. Badgaish and P. Seshaiyer, [S.I.], v. 1, p. 40-60, April 2017. ISSN 2331-5210 (2017).
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66. "Adaptive survival trials", W. F. Rosenberger & P. Seshaiyer, *Journal of Biopharmaceutical Statistics*, Vol 7(4) pp 617-624 (1997).
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### **B.3 Education/Outreach/Curriculum**

68. "From Context to Habit: A new CMATH framework for Undergraduate Research", P. Seshaiyer and C. Caiseda, Chapter in Future of Undergraduate Research in Mathematical Sciences, MAA and CUR, Accepted (2021)
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70. "Transforming Educational Practices through STREAM across the Americas", Seshaiyer, P., *Conexiones*, Seshaiyer, P., pp 77 – 88, 2021.
71. "Developing an asset-based view of students' mathematical competencies through learning trajectory-based lesson study," J. Suh, S. Birkhead, T. Frank, C. Baker, T. Galanti and P. Seshaiyer, *Mathematics Teacher Educator*, NCTM, Vol. 9(3), pp 229 – 245, 2021.
72. "Engaging Students in Applied Mathematics Education and Research for Global Problem Solving," W. Wang and P. Seshaiyer, In *Improving Applied Mathematics Education* (pp. 27-49). Springer International Publishing (2021).
73. "Challenges and Opportunities from COVID-19 for Global Sustainable Development", World Medical & Health Policy, P. Seshaiyer and C. McNeely 12(4): 443-453, 2020.
74. "Females of Color in STEM." Seshaiyer, Padmanabhan, Claudette Davis, Kelly Knight, and Danielle Blunt Craddock. In *Girls and Women of Color In STEM: Their Journeys in Higher Education* (2020): pp: 41 - 61.
75. "Connecting with Teachers through Modeling in Mathematical Biology", P. Seshaiyer and S. Lenhart, *Bulletin of Mathematical Biology*, 82, 98 (2020). <https://doi.org/10.1007/s11538-020-00774-3>
76. "The Impact of COVID-19 on UN Sustainable Development Goals", P. Seshaiyer and C. McNeely, *Contexts Magazine*, URL: <https://contexts.org/blog/covid-19-and-the-future-of-society/#connie> (2020).

77. "Promoting Ambitious Teaching and Learning through Implementing Mathematical Modeling in a PBL Environment: A Case Study," Suh, J. M., & Seshaiyer, P., *The Wiley Handbook of Problem-Based Learning*, 529-550, (2019).
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81. "Challenges in school mathematics curriculum reform in India: Transforming teacher practices through pedagogical innovations", R. Banerjee and P. Seshaiyer, Chapter, *Mathematics Education - An Asian Perspective*, Springer (2018).
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83. "Leading Undergraduate Research Projects in Mathematical Modeling," P. Seshaiyer, *Problems, Resources, and Issues in Mathematics Undergraduate Studies: PRIMUS*, PP 1-18, (2017).
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85. "Leveraging Coach-Facilitated Professional Development to Create Collaborative Teacher Networks for Enhancing Professional Practice", APME, Chapter 7, pp 89 - 100 (2017).
86. "Enhancing Pedagogical Practices Through Professional Development in Proportional Reasoning," *Virginia Mathematics Teacher*, Seshaiyer and Suh, Fall 2016, Vol. 43(1),
87. "Leveraging Coach-Facilitated Professional Development to Create Teacher Social Networks for Enhancing Professional Practice." Suh, J. M., Seshaiyer, P. et. al. In M. Boston & L. West (Eds.), *APME: Reflective and Collaborative Processes to Improve Mathematics Teaching*. NCTM (2016).
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92. "Mapping teachers' understanding of the mathematical learning progression through vertical articulation during Lesson Study", Suh, J. M., & Seshaiyer, P., *AERA*, Philadelphia, PA (2014).
93. "The STEM Road Map for Grades 9-12", in *STEM Road Map: A Framework for Integrated STEM Education* edited by Carla C. Johnson with Erin E. Peters-Burton and Tamara J. Moore (2014).

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#### **B.4 ARTICLES IN REFEREED PROCEEDINGS**

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106. "Quantification of the Rupture Potential of Intracranial Saccular Aneurysms under Contact Constraints," Alam, M., & Seshaiyer, P. In *APS Meeting Abstracts*, (2018).
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