

Niema M Pahlevan, PhD

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Research Interests

- Biofluid Dynamics
- Minimally Invasive Technologies in Medicine
- Modeling Physiological and Biological Systems
- Time-Frequency Analysis
- Physics of Fluids in Cardiovascular and Cerebrovascular Diseases
- Physics-Based Machine Learning in Medicine
- Noninvasive Diagnostic Methods
- Cardiovascular MRI
- Hemodynamics

Education

- **PhD, Bioengineering, 2007 – 2013 (*Best Thesis Defense Presentation Award*)**
California Institute of Technology, Pasadena, CA
Thesis title: “A Systems Approach to Cardiovascular Health and Disease with a Focus on Aortic Wave Dynamics”
- **M.S., Mechanical Engineering, 2005-2007 (*With Distinction*)**
California State University, Northridge, CA
Thesis title: “A State-space Analysis during Pedaling of Optimized Ergometric Bicycle”
- **B.S., Mechanical Engineering, 1996-2001**
University of Tehran, Tehran, Iran

Academic Appointments

- **Associate Professor of Aerospace & Mechanical Engineering, and Medicine, 2024-Present**
University of Southern California, Los Angeles, CA
- **Gordon S. Marshall Early Career Chair in Engineering, 2022-Present**
University of Southern California, Los Angeles, CA
- **Assistant Professor of Aerospace & Mechanical Engineering, 2017-2024**
University of Southern California, Los Angeles, CA
- **Assistant Professor of Medicine, Division of Cardiovascular Medicine, 2017-2024**
University of Southern California, Los Angeles, CA
- **James Boswell Postdoctoral Scholar, 2014-2016**
California Institute of Technology, Pasadena, CA

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- **Clinical Research Investigator, 2014-2016**
Huntington Medical Research Institute (HMRI), Pasadena, CA
- **Postdoctoral Scholar, Medical Engineering, 2013-2014**
California Institute of Technology, Pasadena, CA

Honors and Awards

- National Science Foundation (NSF) CAREER Award, 2022
- Gordon S. Marshall Early Career Chair in Engineering, USC, 2022
- USC Viterbi Faculty Junior Research Award, 2022
- American Heart Association (AHA) *Career Development Award*, 2020
- American Heart Association (AHA) *Postdoctoral Fellowship*, 2014
- *James Boswell Postdoctoral Fellowship Award* (Huntington Medical Research Institute-Caltech), 2014
- *The Hans G. Hornung Prize* (best PhD thesis defense presentation award), GALCIT, California Institute of Technology, 2013
- American Heart Association (AHA) *Predoctoral Fellowship*, 2012
- *Travel stipend award* for the 7th Hypertension Summer School AHA, 2010
- *Distinguished Graduate Student of the Year*, Mechanical Engineering Department, California State University Northridge, 2007
- *Boeing Annual Scholarship Award*, 2006
- *Certificate of Recognition "Master Tutor: A Guide for More Effecting Tutoring Program"*, College of Engineering and Computer Science, California State University Northridge, 2006

Peer-Reviewed Journal Publications

Students, postdocs, fellows, residents advised at USC are underlined (asterisk* denotes student directly advised by me at USC)

50. Alavi R*, Dai W, Matthews RV, Kloner RA, and **Pahlevan NM**. (2023) "Instantaneous Detection of Acute Myocardial Infarction and Ischemia from a Single Carotid Pressure Waveform in Rats". *European Heart Journal Open*. 3(5): oead099.
<https://doi.org/10.1093/ehjopen/oead099>
49. Wei H*, Hutchins DA, Ronney PD, and **Pahlevan NM**. (2023) "Fluid-based microbial processes modeling in Trichodesmium colony formation". *Physics of Fluids*. 35(10): 101902.
<https://doi.org/10.1063/5.0165872>
48. Aghilinejad A*, Amlani F, Mazandarani SP, King KS, and **Pahlevan NM**. (2023) "Mechanistic Insights on Age-Related Changes in Heart-Aorta-Brain Hemodynamic Coupling Using a Pulse Wave Model of The Entire Circulatory System". *American Journal of Physiology-Heart and Circulatory Physiology*. 325(5): H1193-H1209.
<https://doi.org/10.1152/ajpheart.00314.2023>
47. Amlani F, Wei H*, and **Pahlevan NM**. (2023). "A Fourier-based Methodology Without Numerical Diffusion for Conducting Dye Simulations and Particle Residence Time Calculations". *Journal of Computational Physics*. 2023:112472.
<https://doi.org/10.1016/j.jcp.2023.112472>

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46. [Aghilinejad A*](#), [Rogers B*](#), [Geng H*](#), and **Pahlevan NM**. (2023) “On the Longitudinal Wave Pumping in the Fluid-filled Compliant Tubes”. *Physics of Fluids*. 35, 091903.
<https://doi.org/10.1063/5.0165150>
45. [Niroumandi S*](#), [Alavi R*](#), Wolfson AM, Vaidya AS, and **Pahlevan NM**. (2023) “Assessment of Aortic Characteristic Impedance and Arterial Compliance from Non-invasive Carotid Pressure Waveform in The Framingham Heart Study”. *The American Journal of Cardiology*. 204: 195-199.
<https://doi.org/10.1016/j.amjcard.2023.07.076>
44. [Alavi R*](#), Wang Q, Gorji H, and **Pahlevan NM**. (2023) “A Machine Learning Approach for Computation of Cardiovascular Intrinsic Frequencies”. *PLoS ONE*, 18(10):e0285228.
<https://doi.org/10.1371/journal.pone.0285228>
43. [Aghilinejad A*](#), [Wei H*](#), [Bilgi C*](#), [Paredes A*](#), DiBartolomeo A, Magee G, and **Pahlevan NM**. (2023) “Framework Development for Patient-specific Compliant Aortic Dissection Phantom Model Fabrication: Magnetic Resonance Imaging Validation and Deep-learning Segmentation”. *Journal of Biomechanical Engineering*, 2023: 1-31.
<https://doi.org/10.1115/1.4062539>
42. [Aghilinejad A*](#), [Wei H*](#), and **Pahlevan NM**. (2023) “Non-invasive Pressure-only Aortic Wave Intensity Evaluation Using Hybrid Fourier Decomposition-Machine Learning Approach”. *IEEE Transactions on Biomedical Engineering*, 2023:1-10.
<https://doi.org/10.1109/TBME.2023.3236918>
41. [Wei H*](#), [Amlani F](#), and **Pahlevan NM**. (2023) “Direct 0D-3D Coupling of a Lattice Boltzmann Methodology for Fluid-Structure Aortic Flow Simulations”. *International Journal for Numerical Methods in Biomedical Engineering*, 39(5):e3683
<https://doi.org/10.1002/cnm.3683>
40. Cheng AL, [Liu J](#), Bravo S, Miller JC, and **Pahlevan NM**. (2023) “Screening Left Ventricular Systolic Dysfunction in Children Using Intrinsic Frequencies of Carotid Pressure Waveforms Measured by A Novel Smartphone-Based Device”. *Physiological Measurement*, 44(3), 035001.
<https://doi.org/10.1088/1361-6579/acba7b>
39. [Bilgi C*](#), [Amlani F](#), [Wei H*](#), Rizzi N, and **Pahlevan NM**. (2023) “Thermal and Postural Effects on Fluid Mixing and Irrigation Patterns for Intraventricular Hemorrhage Treatment”. *Annals of Biomedical Engineering*, 51: 1270–1283.
<https://doi.org/10.1007/s10439-022-03130-9>
38. Gilpin M, [Wei H*](#), and **Pahlevan NM**. (2022) “Womersley's Solution for the Measurement of Volume Flow Rates in Transient Laminar Flow Tubes”. *Physics of Fluids*, 34: 113609.
<https://doi.org/10.1063/5.0121232>
37. [Alavi R*](#), [Aghilinejad A*](#), [Wei H*](#), [Niroumandi S*](#), Wieman S, and **Pahlevan NM**. (2022) “A Coupled Atrioventricular-Aortic Setup for In-Vitro Hemodynamic Study of The Systemic Circulation: Design, Fabrication, and Physiological Relevancy”. *PLoS ONE*, 17(11): e0267765.
<https://doi.org/10.1371/journal.pone.0267765>
36. [Aghilinejad A*](#), [Wei H*](#), Magee G, and **Pahlevan NM**. (2022) “Model-Based Fluid-Structure Interaction Approach for Evaluation of Thoracic Endovascular Aortic Repair Endograft Length in Type B Aortic Dissection”. *Frontiers in Bioengineering and Biotechnology*, 10: 825015.

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<https://doi.org/10.3389/fbioe.2022.825015>

35. Wei H*, Herrington C, Cleveland J, Starnes V, and **Pahlevan NM**. (2021) “Hemodynamically Efficient Artificial Right Atrium Design for Univentricular Heart Patients”. *Physical Review Fluids*, 6(12), 123103. <https://doi.org/10.1103/PhysRevFluids.6.123103>
34. Aghilinejad A*, Alavi R*, Rogers B*, Amlani F, and **Pahlevan NM**. (2021) “Effects of Vessel Wall Mechanics on Non-Invasive Evaluation of Cardiovascular Intrinsic Frequencies”. *Journal of Biomechanics*, 129:110852. <https://doi.org/10.1016/j.jbiomech.2021.110852>
33. Aghilinejad A*, Amlani F, Liu J, and **Pahlevan NM**. (2021). “Accuracy And Applicability of Non-Invasive Evaluation of Aortic Wave Intensity Using Only Pressure Waveforms in Humans”. *Physiological Measurement*, 42(10), 105003. <https://doi.org/10.1088/1361-6579/ac2671>
32. Alavi R*, Dai W, Amlani F, Rinderknecht DG, Kloner RA, and **Pahlevan NM**. (2021). “Scalability of Cardiovascular Intrinsic Frequencies: Validations in Preclinical Models and Non-Invasive Clinical Studies”. *Life Sciences*, 284: 119880. <https://doi.org/10.1016/j.lfs.2021.119880>
31. Liu J and **Pahlevan NM**. (2021) “The Underlying Mechanism of Inter-Site Discrepancies in Ejection Time Measurements from Arterial Waveforms and Its Validation in The Framingham Heart Study”. *American Journal of Physiology-Heart and Circulatory Physiology*, 321(1): H135-H148. <https://doi.org/10.1152/ajpheart.00096.2021>
30. Iskander A, Bilgi C*, Naftalovich R, Hacıhaliloglu I, Berkman T, Naftalovich D, and **Pahlevan NM**. (2021) “The Rheology of the Carotid Sinus: A path toward bioinspired intervention”. *Frontiers in Bioengineering and Biotechnology*, 9: 439. <https://doi.org/10.3389/fbioe.2021.678048>
29. Cooper LL, Rong J, **Pahlevan NM**, Rinderknecht DG, Benjamin EJ, Hamburg NM, Ramachandran VS, Larson MG, Gharib M, and Mitchell GF. (2021) “Intrinsic Frequencies of Carotid Pressure Waveforms Predict Heart Failure Events: the Framingham Heart Study”. *Hypertension*, 77:338–346. (**Selected as a High Impact Paper by the editors**) <https://doi.org/10.1161/HYPERTENSIONAHA.120.15632>
28. Iskander A, Naftalovich R, and **Pahlevan NM**. (2020) “The Carotid Sinus as a Viscometer.” *Diagnostics* 10(11):924. <https://doi.org/10.3390/diagnostics10110924>
27. Mogadam E, Shavelle DM, Giesler, GM., Economides C, Pierre LS, Duquette S, Matthews RV, **Pahlevan NM**. (2020) “Intrinsic Frequency Method for Instantaneous Assessment of Left Ventricular-Arterial Coupling After Transcatheter Aortic Valve Replacement”. *Physiological Measurement*, 41(8): 085002. <https://doi.org/10.1088/1361-6579/aba67f>
26. Wei H*, Cheng AL, and **Pahlevan NM**. (2020) “On the Significance of Blood Flow Shear-rate-dependency in Modeling of Fontan Hemodynamics”. *European Journal of Mechanics-B/Fluids*, 84:1-14. <https://doi.org/10.1016/j.euromechflu.2020.05.011>

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25. [Aghilinejad A*](#), [Amlani F](#), King KS, and **Pahlevan NM**. (2020) “Dynamic Effects of Aortic Arch Stiffening on Pulsatile Energy Transmission to Cerebral Vasculature as A Determinant of Brain-Heart Coupling”. *Scientific Reports*, 10(1): 1-12.
<https://www.nature.com/articles/s41598-020-65616-7>
24. **Pahlevan NM**, Yao T, Chu K, [Cole S](#), Tran T, Wood JC, and King KS. (2020) “Group Delay Method for MRI Aortic Pulse Wave Velocity Measurements in Clinical Protocols with Low Temporal Resolution: Validation in A Heterogeneous Cohort”. *Magnetic Resonance Imaging*, 69: 8-15.
<https://doi.org/10.1016/j.mri.2020.02.013>
23. **Pahlevan NM** and Mazandarani SP. (2020) “Accuracy of Wave Condition Number from Pressure Waveform Alone and Its Changes with Advancing Age in Healthy Women and Men”. *Frontiers in Physiology*, 11: 313.
<https://doi.org/10.3389/fphys.2020.00313>
22. Rinderknecht DG, de Balasy JM, and **Pahlevan NM**. (2020) “A Wireless Optical Handheld Device for Carotid Waveform Measurement and Its Validation in a Clinical Study”. *Physiological Measurement*, 41(5):055008.
<https://doi.org/10.1088/1361-6579/ab7b3f>
21. [Miller J](#), Shepherd J, Rinderknecht DG, Cheng AL, and **Pahlevan NM**. (2020) “Proof-Of-Concept For A Non-invasive, Portable, and Wireless Device for Cardiovascular Monitoring in Pediatric Patients”. *PLoS ONE*, 15(1): e0227145.
<https://doi.org/10.1371/journal.pone.0227145>
20. [Amlani F](#) and **Pahlevan NM**. (2020) “A Stable High-Order FC-Based Methodology for Hemodynamic Wave Propagation”. *Journal of Computational Physics*, 405, p.109130.
<https://doi.org/10.1016/j.jcp.2019.109130>
19. [Kang J*](#), [Aghilinejad A*](#), and **Pahlevan NM**. (2019) “On the Accuracy of Displacement-Based Wave Intensity Analysis: Effect of Vessel Wall Viscoelasticity And Nonlinearity”. *PLoS ONE*. 14:e0224390.
<https://doi.org/10.1371/journal.pone.0224390>
18. Cheng AL, Wee CP, **Pahlevan NM**, and Wood JC. (2019) “A 4D Flow MRI Evaluation of the Impact of Shear-Dependent Fluid Viscosity on in vitro Fontan Circulation Flow”. *American Journal of Physiology-Heart and Circulatory Physiology*. 317(6), H1243-H1253.
<https://doi.org/10.1152/ajpheart.00296.2019>
17. **Pahlevan NM** and Matthews RV. (2019) “Cardiac Triangle Mapping: A New Systems Approach for Noninvasive Evaluation of Left Ventricular End Diastolic Pressure. *Fluids*. 4(1):16.
<https://doi.org/10.3390/fluids4010016>
16. Armenian SH, Rinderknecht DG, Au K, Lindenfeld L, Mills G, Siyahian A, Herrera C, Wilson K, Venkataraman K, Mascarenhas K, Tavallali P, Razavi M, **Pahlevan NM**, Detterich J, Bhatia S, Gharib M. (2018) “Accuracy of a Novel Handheld Wireless Platform for Detection of Cardiac Dysfunction in Anthracycline-Exposed Survivors of Childhood Cancer”. *Clinical Cancer Research*. 24 (13): 3119-3125.
<https://doi.org/10.1158/1078-0432.CCR-17-3599>
15. Tavallali P, Razavi M, and **Pahlevan NM**. (2018) “Artificial Intelligence Estimation of Carotid-Femoral Pulse Wave Velocity Using Carotid Waveform.” *Scientific Reports*. 8(1), 1014. (*Editor’s choice article*)
<https://www.nature.com/articles/s41598-018-19457-0>

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14. Cheng AL, **Pahlevan NM**, Rinderknecht DG, Wood JC, and Gharib M (2018). "Experimental investigation of the effect of non-Newtonian behavior of blood flow in the Fontan circulation". *European Journal of Mechanics-B/Fluids*. 68:184-192.
<https://doi.org/10.1016/j.euromechflu.2017.12.009>
13. **Pahlevan NM**, Rinderknecht DG, Tavallali P, Razavi, M., Tran TT, Fong M, Kloner RA, Csete M, and M Gharib (2017). "Noninvasive iPhone Measurement of Left Ventricular Ejection Fraction Using Intrinsic Frequency Methodology". *Critical Care Medicine*, 45(7): 1115-1120. (*Editor's selected feature article in July 2017 issue*)
<https://doi.org/10.1097/CCM.0000000000002459>
12. Tavallali P, Hou TY, Rinderknecht DG, and **Pahlevan NM**. (2015) "On the Convergence and Accuracy of the Cardiovascular Intrinsic Frequency Method". *Royal Society Open Science*. 2(12): p.150475.
<https://doi.org/10.1098/rsos.150475>
11. Petrasek D, **Pahlevan NM**, Tavallali P, Rinderknecht DG, and M Gharib. (2015) "Intrinsic Frequency and the Single Wave Biopsy: Implications for Insulin Resistance". *Journal of Diabetes Science and Technology*. 9(6):1246-1252.
<https://doi.org/10.1177/1932296815588108>
10. Falahatpisheh A, **Pahlevan NM**, and A Kheradvar (2015) "Effect of the Mitral Valve's Anterior Leaflet on Axisymmetry of Transmitral Vortex Ring". *Annals of Biomedical Engineering*. 43:2349-2360.
<https://doi.org/10.1007/s10439-015-1302-y>
9. **Pahlevan NM**, Tavallali P, Rinderknecht DG, Petrasek D, Matthews R, Hou TY, and M Gharib (2014). "Intrinsic Frequency as a Systems Approach to Hemodynamic Waveform Analysis with Clinical Applications". *Journal of the Royal Society Interface*. 11(98): 20140617.
<https://doi.org/10.1098/rsif.2014.0617>
8. **Pahlevan NM** and M Gharib. (2014) "A Wave Dynamics Criterion for Optimization of Mammalian Cardiovascular System". *Journal of Biomechanics*. 47(7): 1727-1732.
<https://doi.org/10.1016/j.jbiomech.2014.02.014>
7. **Pahlevan NM** and M Gharib. (2014) "A Bio-Inspired Approach for the Reduction of Left Ventricular Workload". *PLoS ONE* 9(1): e87122.
<https://doi.org/10.1371/journal.pone.0087122>
6. **Pahlevan NM** and M Gharib. (2014) "Pathological Wave Dynamics: A Postulate for Sudden Cardiac Death in the Athletes". *Medical Hypotheses*. 82(1): 64–70.
<https://doi.org/10.1016/j.mehy.2013.11.007>
5. **Pahlevan NM** and M Gharib. (2013) "In-Vitro Investigation of a Potential Wave Pumping Effect in Human Aorta". *Journal of Biomechanics*. 46(13): 2122–2129.
<https://doi.org/10.1016/j.jbiomech.2013.07.006>
4. **Pahlevan NM** and M Gharib. (2011) "Aortic Wave Dynamics and Its Influence on Left Ventricular Workload". *PLoS ONE* 6(8): e23106.
<https://doi.org/10.1371/journal.pone.0023106>
3. **Pahlevan NM** and M Gharib. (2011) "Low Pulse Pressure with High Pulsatile External Left Ventricular Power: Influence of Aortic Waves". *Journal of Biomechanics*. 44(11): 2083–2089.
<https://doi.org/10.1016/j.jbiomech.2011.05.016>

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2. **Pahlevan NM**, Amlani F, Gorji H, Hussain F, and M Gharib. (2011) “A Physiologically Relevant, Simple Outflow Boundary Model for Truncated Vasculature”, *Annals of Biomedical Engineering*. 39(5): 1470-1481.
<https://doi.org/10.1007/s10439-011-0246-0>
1. Lin BA, Forouhar AS, **Pahlevan NM**, Anastassiou CA, Grayburn PA, Thomas JD, and M Gharib. (2010) “Color Doppler Jet Area Overestimates Regurgitant Volume when Multiple Jets are Present.” *Journal of the American Society of Echocardiography*. 23(9): 993-1000.
<https://doi.org/10.1016/j.echo.2010.06.011>

Book Chapter

1. **Pahlevan NM**. (2019) “Bernoulli’s equation, significance, and limitations”. *Principles of Heart Valve Engineering*. (pp. 381-388). Academic Press
<https://doi.org/10.1016/C2017-0-00983-7>

Peer-Reviewed Conference Proceeding Publications

Students and Research Associates (Postdocs, Fellows, Residents) underlined

34. Alavi R, Mazandarani SP, Dai W, Arechavala R, Herman D, Kleinman M, Kloner RA, **Pahlevan NM**. (2024). “Detection Of Adverse Effects of Chronic E-Cigarette and Standard Cigarette on Ventricular and Arterial Functions in Rats Using Intrinsic Frequencies of Carotid Pressure Waveforms”. *Journal of the American College of Cardiology*. 83(13): 1809-1809
[https://doi.org/10.1016/S0735-1097\(24\)03799-9](https://doi.org/10.1016/S0735-1097(24)03799-9)
33. Vaidya AS, Niroumandi S, Mazandarani SP, Wolfson AM, and **Pahlevan NM**. (2024). “Left Ventricle Pulsatile Workload from A Single Pressure Waveform Using Physics-Based Machine Learning Approach and Cardiovascular Disease Events in The Framingham Heart Study”. *Journal of the American College of Cardiology*. 83(13): 2451-2451.
[https://doi.org/10.1016/S0735-1097\(24\)04441-3](https://doi.org/10.1016/S0735-1097(24)04441-3)
32. Zhou L, Rafiei D, Mogadam E, Alavi R, **Pahlevan NM**, Mehra AO. (2024). “Indirect Ballistic Injury Resulting in Shockwave-Induced NSTEMI”. *Journal of the American College of Cardiology*. 83(13): 3394-3394.
[https://doi.org/10.1016/S0735-1097\(24\)05384-1](https://doi.org/10.1016/S0735-1097(24)05384-1)
31. Vaidya AS, Niroumandi S, Mazandarani SP, Wolfson AM, and **Pahlevan NM**. (2024). “Single Pressure Waveform Calculation of Total Arterial Compliance Predict Heart Failure Events in Framingham Heart Study”. *Journal of the American College of Cardiology*. 83(13): 712-712.
[https://doi.org/10.1016/S0735-1097\(24\)02702-5](https://doi.org/10.1016/S0735-1097(24)02702-5)
30. Vaidya AS, Niroumandi S, Mazandarani SP, Wolfson AM, and **Pahlevan NM**. (2024). “Prognostic Value of Aortic Characteristic Impedance Calculated from A Single Carotid Waveform Using Hybrid Intrinsic Frequency-Machine Learning Approach”. *Journal of the American College of Cardiology*. 83(13): 1988-1988.
[https://doi.org/10.1016/S0735-1097\(24\)03978-0](https://doi.org/10.1016/S0735-1097(24)03978-0)

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29. [Bilgi C*](#), Lin BA, and **Pahlevan NM**. (2023). “A New Left Ventricle Vortex Formation Time for Clinical Assessment of Diastolic Filling Efficiency Based on Direct Mechanical Ventricular-Vascular Coupling: Evaluation in Heart-Failure and Healthy Cohort”. *Circulation*. 148: A16610-A16610
https://www.ahajournals.org/doi/abs/10.1161/circ.148.suppl_1.16610
28. [Wei H*](#), Cao K, **Pahlevan NM**, and Cheng AL. (2023). “Shear-Dependent Changes in Blood Viscosity Negatively Affect Energetic Efficiency in Patient-Specific Models of the Fontan Circulation”. *Circulation*. 148: A12955-A12955
https://www.ahajournals.org/doi/abs/10.1161/circ.148.suppl_1.12955
27. [Liu J*](#), Bregasi A, Mitchell GF, and **Pahlevan NM**. (2023). “Noninvasive Left Ventricle Pressure-Volume Loop Determination Method With Cardiac Magnetic Resonance Imaging and Carotid Tonometry Using a Physics-Informed Approach”. *Circulation*. 148: A16561-A16561
https://www.ahajournals.org/doi/abs/10.1161/circ.148.suppl_1.16561
26. [Niroumandi S*](#), Rinderknecht D, Bilgi C, Wolfson A, Vaidya A, King KS, and **Pahlevan NM**. (2023). “A Noninvasive Smartphone Assessment of Aortic Arch Pulse Wave Velocity and Total Arterial Compliance”. *Circulation*. 148: A18846-A18846
https://www.ahajournals.org/doi/abs/10.1161/circ.148.suppl_1.18846
25. Liu J, [Niroumandi S*](#), Petrasek D, and **Pahlevan NM**. (2023). “Non-Invasive Insulin Resistance Evaluation Using Carotid Pressure Waveforms in Framingham Heart Study”. *Circulation*. 148: A16533-A16533
https://www.ahajournals.org/doi/abs/10.1161/circ.148.suppl_1.16533
24. Shavelle D, Rinderknecht D, Jin W, Chiu WB, Krupa A, **Pahlevan NM**, Cook K, Mendelsohn F, Cawthon T, Reeves R, mcnamara R. et al (2023). “A Multicenter Validation of a Noninvasive Brachial Cuff-ECG System for Estimation of Elevated Left Ventricular End Diastolic Pressure”. *Circulation*. 148: A16544-A16544
https://www.ahajournals.org/doi/abs/10.1161/circ.148.suppl_1.16544
23. [Niroumandi S*](#), Wolfson AM, Vaidya AS, and **Pahlevan NM**. (2023). “Evaluation Of Left Ventricular Pulsatile Workload In Heart Failure With Preserved Ejection Fraction Using A Single Pressure Waveform Form Framingham Heart Study”. *Hypertension*. 80:AP367
https://doi.org/10.1161/hyp.80.suppl_1.P367
22. [Alavi R](#), Dai W, Kloner RA, **Pahlevan NM**. (2023). “Noninvasive and Instantaneous Detection of Myocardial Ischemia from A Single Carotid Waveform Using A Physics-Based Machine Learning Methodology. *Journal of the American College of Cardiology*. 81(8S), 4012-4012
[https://doi.org/10.1016/S0735-1097\(23\)04456-X](https://doi.org/10.1016/S0735-1097(23)04456-X)
21. [Alavi R](#), Dai W, Arechavala RJ, Kleinman MT, Kloner RA, **Pahlevan NM**. (2022). “Detection of the Effect of Nicotine Delivered by E-Cigarettes or Standard Cigarettes on Cardiovascular System From a Carotid Waveform Using a Physics-Based Machine Learning Approach. *Circulation*. 146: A12922-A12922
https://www.ahajournals.org/doi/10.1161/circ.146.suppl_1.12922
20. [Niroumandijahromi S](#), Vaidya A, **Pahlevan NM**. (2022) “Hybrid Intrinsic Frequency Machine Learning Approach for Calculation of Total Arterial Compliance and Aortic Characteristic Impedance from A Single Carotid Waveform in Heart Failure With Preserved Ejection Fraction”. *Hypertension*. 79: A039-A039.
https://doi.org/10.1161/hyp.79.suppl_1.039

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19. [Alavi R](#), Dai W, Kloner RA, and **Pahlevan NM**. (2021) "A Physics-Based Machine Learning Approach for Instantaneous Classification of Myocardial Infarct Size". *Circulation*. 144: A12098- A12098.
https://doi.org/10.1161/circ.144.suppl_1.12098
18. [Liu J](#) and **Pahlevan NM**. (2021) "Evaluation of a Non-invasive Left Ventricular Pressure-volume Loop Approximation Method Based on Arterial Blood Pressure Values and Cardiac MRI". *Circulation*. 144: A14056- A14056.
https://doi.org/10.1161/circ.144.suppl_1.14056
17. [Alavi R](#), Dai W, Arechavala RJ, Kleinman MT, Kloner RA, and **Pahlevan NM**. (2021) "Nicotine Delivered by Electronic Cigarette Vapor or Standard Cigarettes Adversely Affects Left Ventricular Systolic Function Measured by Cardiovascular Intrinsic Frequency in Rats". *Circulation*. 144: A13745- A13745.
https://www.ahajournals.org/doi/10.1161/circ.144.suppl_1.13745
16. [Alavi R](#), [Liu J](#), Ramos M, Hindoyan A, Matthews RV, and **Pahlevan NM**. (2021) "A Hybrid Machine Learning Method for Instantaneous Classification of Left Ventricular Filling Pressure Using Femoral Waveforms". *Circulation*. 144: A14086- A14086.
https://doi.org/10.1161/circ.144.suppl_1.14086
15. [Mogadam E](#), Shavelle D, [Liu J](#), Giesler G, Matthews RV, and **Pahlevan NM**. (2020) "Validation of A Non-invasive Approach for The Assessment of Left Ventricular-arterial Coupling Following Transcatheter Aortic Valve Replacement". *Circulation*, 142, A16138-A16138.
https://doi.org/10.1161/circ.142.suppl_3.16138
14. [Alavi R](#), Dai W, RA Kloner, and **Pahlevan NM**. (2020) "A Hybrid Artificial Intelligence-Intrinsic Frequency Method for Instantaneous Determination of Myocardial Infarct Size". *Circulation*, 142, A15899-A15899.
https://doi.org/10.1161/circ.142.suppl_3.15899
13. **Pahlevan NM**, [Alavi R](#), Ramos M, Hindoyan A, and RV Matthews. (2020) "An Artificial Intelligence Derived Method For Instantaneous Detection Of Elevated Left Ventricular End Diastolic Pressure". *Circulation*, 142, A16334-A16334.
https://doi.org/10.1161/circ.142.suppl_3.16334
12. Gonser M, **Pahlevan NM**, and M Gharib. (2020). Optimisation Criterion for Pulsatile Timing: Observation in The Human Fetus. *Ultrasound in Obstetrics and Gynecology*, 56(S1), 197-198
<https://obgyn.onlinelibrary.wiley.com/doi/full/10.1002/uog.22839>
11. [Alavi R](#), Dai W, Kloner RA, and **Pahlevan NM**. (2019) "A Hybrid Artificial Intelligence-Intrinsic Frequency Method for Instantaneous Detection of Acute Myocardial Infarction". *Circulation*, 140(1), A12573-A12573.
https://www.ahajournals.org/doi/10.1161/circ.140.suppl_1.12573
10. Cooper LL, Rong J, **Pahlevan NM**, Rinderknecht DG, Benjamin EJ, Hamburg NM, Ramachandran VS, Larson MG, Gharib M, and Mitchell GF. (2019) "Intrinsic Frequencies of Carotid Pressure Waveforms Predict Cardiovascular Disease Events: The Framingham Heart Study". *Circulation*, 140(1), A14748- A14748.
https://www.ahajournals.org/doi/10.1161/circ.140.suppl_1.14748

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9. **Mogadam E**, Giesler G, Matthews RV, and **Pahlevan NM**. (2019) “A New Method for Instantaneous and Noninvasive Evaluation of Left Ventricular-Arterial Performance Following Transcatheter Aortic Valve Replacement”. *Circulation*, 140(1), A15284-A15284.
https://www.ahajournals.org/doi/10.1161/circ.140.suppl_1.15284
8. Cheng AL, **Pahlevan NM**, and Wood JC. (2018) “Non-newtonian behavior significantly affects hemodynamic efficiency in a four-dimensional flow magnetic resonance Fontan model”. *Journal of the American College of Cardiology*. 71(11S): A622-A622.
[https://doi.org/10.1016/S0735-1097\(18\)31163-X](https://doi.org/10.1016/S0735-1097(18)31163-X)
7. **Pahlevan NM**, Dai W, and RA Kloner. (2018). “Noninvasive and Instantaneous Diagnostics of Acute Myocardial Infarction Using Intrinsic Frequency Method”. *Circulation*, 138(1), A15311-A15311.
https://www.ahajournals.org/doi/10.1161/circ.138.suppl_1.15311
6. **Pahlevan NM**, Ramos M, and RV Matthews. (2018). “A Systems Approach for Noninvasive and Instantaneous Measurement of Left Ventricular End Diastolic Pressure Using Smartphone”. *Circulation*, 138(1), A16274-A16274.
https://www.ahajournals.org/doi/10.1161/circ.138.suppl_1.16274
5. **Pahlevan NM**. (2018). “MRI-based Measures of Left Ventricle Contractility and Intrinsic Frequency”. *Proceedings of 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*.
4. Razavi, M. and **NM Pahlevan**. (2017) “Wave Condition Number Is Useful in Predicting Risk for Coronary Heart Disease from Framingham Heart Study Data”. *Circulation*. 136: A19399-A19399.
https://www.ahajournals.org/doi/10.1161/circ.136.suppl_1.19399
3. **Pahlevan NM**, Rinderknecht DG, Tavallali P, Razavi, M., Tran TT, Fong M, Kloner RA, Csete M, and M Gharib. (2016) “A New Noninvasive iPhone Application to Monitor Left Ventricle Ejection Fraction in Heart Failure Patients”. *Circulation*. 134: A17227.
https://www.ahajournals.org/doi/10.1161/circ.134.suppl_1.17227
2. **Pahlevan NM**, Petrasek D, Rinderknecht DG, Tavallali P, and M Gharib . (2014). “Calculating Pulse Wave Velocity from a Single Pressure Waveform Using the Intrinsic Frequency Method”. *Hypertension*. 64.Suppl 1: A355-A355
https://doi.org/10.1161/hyp.64.suppl_1.355
1. **Pahlevan NM**, and M Gharib. (2010) “Pulse Pressure as a Single Index May not Represent the Level of Left Ventricle Work Load: Influence of Aortic Wave Dynamics”. *Hypertension*. 56(5): E79-E79.
<https://doi.org/10.1161/HYP.0b013e3181faa059>

Patents*Issued Patents (US)*

17. Gharib M and **Pahlevan NM**. (2023) “Method and apparatus for left ventricular end diastolic pressure measurement”. (US11730376B2). (*licensed to industry*)
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/11730376>

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16. Rinderknecht DG, **Pahlevan NM**, Tavallali P, and M Gharib. (2021) “Portable electronic hemodynamic sensor systems” (US10918291B2). (*licensed to industry*)
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/10918291>
15. **Pahlevan NM** and M. Gharib. (2017) “Noninvasive Systems for Blood Pressure Measurement in Arteries” (US9622666 B2) (*licensed to industry*)
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/9622666>
14. **Pahlevan NM**, Tavallali P, Rinderknecht DG, and M Gharib. (2016) “Intrinsic frequency analysis for left ventricle ejection fraction or stroke volume determination” (US9480406B2). (*licensed to industry*)
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/9480406>
13. **Pahlevan NM**, Tavallali P, Hou TY, and M Gharib. (2016) “Intrinsic Frequency Hemodynamic Waveform Analysis” (US9026193B2). (*licensed to industry*)
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/9462953>
12. Gharib M and **Pahlevan NM**. (2015) “Correction and Optimization of Wave Reflection in Blood Vessels”. (US9125655B2)
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/9125655>

Issued Patents (Internationals)

11. **Pahlevan NM**, Tavallali P, Rinderknecht DG, and Gharib M. “Intrinsic frequency analysis for left ventricle ejection fraction or stroke volume determination”. *China* (CN105764412B), *European Patent Office* (EP3057498B1),
<https://patentimages.storage.googleapis.com/0a/b9/2b/0ea786eb746bf1/EP3057498B1.pdf>
10. Rinderknecht DG, **Pahlevan NM**, Tavallali P, and M Gharib. “Portable electronic hemodynamic sensor systems” *China* (CN105916439B)
<https://patentimages.storage.googleapis.com/42/60/cb/9dddea5803f0b8/CN105916439B.pdf>
9. **Pahlevan NM**, Tavallali P, Hou TY, and Gharib M. “Intrinsic Frequency Hemodynamic Waveform Analysis”. *Japan* (JP6162143B2), *Singapore* (SG11201403291VA), *Mexico* (MX354979B)
<https://patentimages.storage.googleapis.com/3b/df/d8/a4a04c2895ca99/JP6162143B2.pdf>
8. Gharib M and **Pahlevan NM**. “Noninvasive systems for aortic aneurysm evaluation”. *China* (CN104619244B)
<https://patentimages.storage.googleapis.com/d3/57/7b/f8175d13f4a4de/CN104619244B.pdf>

US and International Patent Applications (non-provisional)

8. Alavi R, Amlani F, Gorji H, Niroumandijahromi S, Heng Wei H, and **Pahlevan NM**. (2024). “Sequentially-Reduced Artificial Intelligence Based Systems And Methods For Cardiovascular Transfer Functions” (US-20230138773-A1).
<https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/20240138773>
7. **Pahlevan NM**, Alavi R, Wang Q, and Gorji H. (2023). “Sequentially-reduced Artificial intelligence methodology for instantaneous determination of waveform intrinsic frequencies” (US-20230148969-A1).
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/20230148969>

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6. Herrington CS, Menteer JD, Badran S, Wei H, and **Pahlevan NM**. (2021). “Artificial right atrium design for failing fontans” (US20210154385A1).
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/20210154385>
5. **Pahlevan NM**, Gharib M, and M Csete. (2021). “Vessel compression with hemodynamic wave reflection to control vascular wave dynamics and enhance blood flow” (US20210205598A1).
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/20210205598>
4. **Pahlevan NM**, Alavi R, Dai W, Kloner RA. (2021). “Noninvasive infarct size determination” (US20230389850A1).
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/20230389850>
3. **Pahlevan NM**, Alavi R, Dai W, and Kloner RA. (2021). “Noninvasive cardiovascular event detection” (US-20230404488-A1).
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/20230404488>
2. **Pahlevan NM**, Alavi R, and Matthews RV (2021). “Noninvasive heart failure detection” (WO2022101809A1).
<https://patentimages.storage.googleapis.com/75/6a/67/e5a398b9cdf95b/WO2022101809A1.pdf>
1. Rinderknecht DG, Gharib M, **Pahlevan NM**, and P Tavallali. (2017). “Heart sound and pulse waveform acquisition and analysis”. (US20170020400A1).
<https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/20170020400>

Research Grants

For the sections below, an asterisk (*) denotes a competitive grant, (†) denotes an active grant.
For details about each grant, please e-mail me directly (pahlevan@usc.edu)

Total: ~\$7.2M

As PI: ~\$6.9M

Pahlevan’ lab portion: ~\$4.1M

G20) *†National Science Foundation (NSF) CAREER Award

Period 4/01/2022-3/31/2027

Title CAREER: Hemodynamic Mechanisms of Heart-Aorta-Brain Coupling with An Integrated Preventive Medicine Education Program for Socioeconomically Disadvantaged Groups

G19) *†Krueger v. Wyeth Grant (United States District Court-Southern District of California)

Period 11/01/2021-10/31/2026

Title A Noninvasive, Inexpensive Artificial Intelligence (AI) Based Intervention for Heart Failure Patients to Reduce Morbidity, Hospitalizations, and Improve Quality of Life (*Judge John A. Houston Artificial Intelligence Technology for Heart Monitoring*)

G18) *†American Heart Association (AHA) predoctoral grant (predoc candidate: Soha Niroumandi)

Period 01/01/2024-12/31/2025

Title A Noninvasive Smartphone-based Approach for Assessment of Dementia Risk Predictors Using Arterial Pressure Waveform

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G17) *American Heart Association (AHA) Career Development Award

Period 1/01/2021-12/31/2023

Title A System Fluid Dynamics Approach for Development of Noninvasive Diagnostics of Acute and Chronic Cardiovascular Diseases

G16) *NIH High Priority, Short-Term Project Award (NIH-R56)

Period 9/15/2020-8/31/2023

Title Hemodynamic Mechanisms Linking Aortic Arch Stiffness with Brain Insult in Older Adults

G15) *†American Heart Association (AHA)

Period 8/14/2022-06/30/2024

Title Impact of Blood Viscosity and Vascular Compliance of Fontan Circulation Dysfunction in Children

G14) †Research Gift from IRRAS (II)

Period 03/21/2023-

Title Fluid mixing and targeted drug delivery for intraventricular hemorrhage patients

G13) †Avicena LLC Sponsored Research

Period 11/01/2022-10/31/2024

Title Machine Learning Analysis of Hemodynamic Waveforms

G12) *American Heart Association (AHA) predoctoral grant (*predoc candidate: Arian Aghilinejad*)

Period 1/01/2022-5/12/2023

Title Hemodynamic Effects of Ascending Aortic Longitudinal Stretch on Ventricular-Arterial Coupling in Heart Failure Patients

G11) US Air Force Research Laboratory (AFRL)

Period 08/05/2020-12/31/2021

Title Womersley Flowmeter Project-Phase 2

G10) Research Gift from IRRAS (I)

Period 06/29/2021-

Title Fluid mixing and targeted drug delivery for intraventricular hemorrhage patients

G9) Avicena LLC Sponsored Research

Period 08/01/2019-07/31/2021

Title Exploring a Novel Non-Invasive Method to Measure the Cardiovascular System's Performance

G8) The Saban Research Institute, Children's Hospital Los Angeles

Period 07/01/18-06/30/20

Title Evaluation of Non-Newtonian Behavior in the Fontan Circulation

G7) †Research Gift from William and Jane Ballhaus (PI: Gregory Magee)

Period 11/1/19 - 6/30/22

Title Aortic Dissection flow dynamics & modeling

G6) US Air Force Research Laboratory (AFRL)

Period 07/01/2019-09/30/2020

Title Womersley Flowmeter Project-Phase 1

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G5) *FDA/Atlantic Pediatric Device Consortium

Period 3/1/17-8/31/18

Title A noninvasive and inexpensive device for Hemodynamic Monitoring of Pediatric

USC Internal Research Grants

An asterisk (*) denotes competitive grants

G4) *Strategic Directions for Research Award (SDRA)

Period 6/01/2021-5/31/2023

Title Life in a turbulent ocean: Understanding the microbiology of a keystone marine nitrogen fixer with fluid mechanics.

G3) Lynn Huang Cardiovascular Research Funding

Period 11/8/19 - 11/7/20

Title Noninvasive Measurement of Left Ventricular End Diastolic Pressure

G2) USC Department of Surgery

Period 8/15/18 - 12/31/19

Title Development of Circulatory Assist Device for Fontan Patients

G1) Research Gift from Sean Brady (PI: Ray V. Matthews)

Period no restriction

Title Unrestricted gift for Novel Hemodynamics Research

PI Ray V. Matthews (USC, Division of Cardiovascular Medicine)

Conference Presentations

Presenter underlined. For section below, an asterisk (*) denotes student and postdocs advised at USC

61. Zhou L, Rafiei D*, Mogadam E, Alavi R*, **Pahlevan NM**, Mehra AO. (2024). "Indirect Ballistic Injury Resulting in Shockwave-Induced NSTEMI". *American College of Cardiology Annual Scientific Session*. Atlanta, Georgia, April 2024.
60. Vaidya AS, Niroumandi S, Mazandarani SP, Wolfson AM, and **Pahlevan NM**. (2024). "Prognostic Value of Aortic Characteristic Impedance Calculated from A Single Carotid Waveform Using Hybrid Intrinsic Frequency-Machine Learning Approach". *American College of Cardiology Annual Scientific Session*. Atlanta, Georgia, April 2024.
59. Alavi R*, Mazandarani SP, Dai W, Arechavala R, Herman D, Kleinman M, Kloner RA, **Pahlevan NM**. (2024). "Detection Of Adverse Effects of Chronic E-Cigarette and Standard Cigarette on Ventricular and Arterial Functions in Rats Using Intrinsic Frequencies of Carotid Pressure Waveforms". *American College of Cardiology Annual Scientific Session*. Atlanta, Georgia, April 2024
58. Vaidya AS, Niroumandi S*, Mazandarani SP, Wolfson AM, and **Pahlevan NM**. (2024). "Left Ventricle Pulsatile Workload from A Single Pressure Waveform Using Physics-Based Machine Learning Approach and Cardiovascular Disease Events in The Framingham Heart Study". *American College of Cardiology Annual Scientific Session*. Atlanta, Georgia, April 2024.
57. Vaidya AS, Niroumandi S*, Mazandarani SP, Wolfson AM, and **Pahlevan NM**. (2024). "Single Pressure Waveform Calculation of Total Arterial Compliance Predict Heart Failure Events in Framingham Heart Study". *American College of Cardiology Annual Scientific Session*. Atlanta, Georgia, April 2024.
56. Wei H*, Cao K, Cheng AL, and **Pahlevan NM**. (2023) "The significance of non-Newtonian behavior in the Fontan circulation: a computational fluid dynamics study on pediatric patient-specific models".

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American Physical Society-Division of Fluid Dynamics (APS-DFD), 76th Annual Meeting, Washington, DC

55. Rafieianzab D*, and **Pahlevan NM**. (2023) “In-vitro experimental investigation of the global hemodynamic effects of aortic coarctation on carotid and renal pulsatile blood flow”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 76th Annual Meeting, Washington, DC*
54. Amlani F, Wei H* and **Pahlevan NM**. (2023) “A hybrid Fourier continuation-lattice Boltzmann method for the numerical simulation of 3D incompressible fluid-structure interactions”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 76th Annual Meeting, Washington, DC*
53. Bilgi C*, **Pahlevan NM**, and Wei H*. (2023) “Three-Dimensional Quantitative Pulsatile Flow Analysis in a Physiologically Accurate Collapsible Jugular Vein Model”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 76th Annual Meeting, Washington, DC*
52. **Pahlevan NM**, Alavi R*, Dai W, and Kloner RA. (2023) “Assessment of Hemodynamic Changes During Acute Myocardial Ischemia and Infarction Using Intrinsic Frequency Method”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 76th Annual Meeting, Washington, DC*
51. Niroumandijahromi S*, Amlani F, Matthews R, and **Pahlevan NM**. (2023) “The Influence of Left Ventricle and Aorta Interactions on the Coronary Blood Flow Using One-Dimensional Model of Hemodynamics and Wave Propagation in the Entire Circulatory System”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 76th Annual Meeting, Washington, DC*
50. Alavi R*, Dai W, Kloner RA, and **Pahlevan NM**. (2023) “Systems hemodynamics approach for evaluating myocardial risk zone from carotid pressure waveforms in coronary occlusion/reperfusion rat models”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 76th Annual Meeting, Washington, DC*
49. Niroumandijahromi S*, Wolfson AM, Vaidya AS, and **Pahlevan NM**. (2023). “Evaluation Of Left Ventricular Pulsatile Workload In Heart Failure With Preserved Ejection Fraction Using A Single Pressure Waveform Form Framingham Heart Study”. *American Heart Association's Hypertension Scientific Sessions*, Boston, Massachusetts, 2023.
48. Wei H*, Cao K, **Pahlevan NM**, and Cheng AL. (2023). “Shear-Dependent Changes in Blood Viscosity Negatively Affect Energetic Efficiency in Patient-Specific Models of the Fontan Circulation”. *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania, 2023.
47. Bilgi C*, Lin BA, and **Pahlevan NM**. (2023). “A New Left Ventricle Vortex Formation Time for Clinical Assessment of Diastolic Filling Efficiency Based on Direct Mechanical Ventricular-Vascular Coupling: Evaluation in Heart-Failure and Healthy Cohort”. *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania, 2023.
46. Shavelle D, Rinderknecht D, Jin W, Chiu WB, Krupa A, **Pahlevan NM**, Cook K, Mendelsohn F, Cawthon T, Reeves R, mcnamara R. et al (2023). “A Multicenter Validation of a Noninvasive Brachial Cuff-ECG System for Estimation of Elevated Left Ventricular End Diastolic Pressure”. *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania, 2023.
45. Liu J*, Bregasi A, Mitchell GF, and **Pahlevan NM**. (2023). “Noninvasive Left Ventricle Pressure-Volume Loop Determination Method With Cardiac Magnetic Resonance Imaging and Carotid Tonometry Using a Physics-Informed Approach”. *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania, 2023.

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44. Niroumandi S*, Rinderknecht D, Bilgi C, Wolfson A, Vaidya A, King KS, and **Pahlevan NM**. (2023). “A Noninvasive Smartphone Assessment of Aortic Arch Pulse Wave Velocity and Total Arterial Compliance”. *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania, 2023.
43. Liu J, Niroumandi S*, Petrasek D, and **Pahlevan NM**. (2023). “Non-Invasive Insulin Resistance Evaluation Using Carotid Pressure Waveforms in Framingham Heart Study”. *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania, 2023.
42. Bilgi C*, and **Pahlevan NM**. (2022) “A New Generalized Reynolds Number Formulation for Pseudo-Plastic Fluids”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 75th Annual Meeting, Indianapolis, Indiana*
41. Wei H *, Hutchins D, Ronney P, and **Pahlevan NM**. (2022) “Fluid-based microbial processes modeling in Trichodesmium colonies”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 75th Annual Meeting, Indianapolis, Indiana*
40. Aghilinejad A*, Geng H*, and **Pahlevan NM**. (2022) “Wave pumping mechanism from aortic stretch and recoil in the systemic circulation”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 75th Annual Meeting, Indianapolis, Indiana*
39. **Pahlevan NM**, Rogers B*, Geng H*, and Aghilinejad A*. (2022) “Longitudinal resonance wave pumping in compliant tubes: a bio-inspired approach”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 75th Annual Meeting, Indianapolis, Indiana*
38. Amlani F*, Wei H *, and **Pahlevan NM**. (2022) “A high-order spectral solver for dye evolution and particle residence time calculations”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 75th Annual Meeting, Indianapolis, Indiana*
37. Alavi R*, Dai W, Arechavala RJ, Kleinman MT, RA Kloner, and **Pahlevan NM**. (2022) “Detection of the Effect of Nicotine Delivered by E-Cigarettes or Standard Cigarettes on Cardiovascular System From a Carotid Waveform Using a Physics-Based Machine Learning Approach”. *American Heart Association's Scientific Sessions*, Chicago IL, November 2022.
36. Niroumandijahromi S*, Vaidya A, **Pahlevan NM**. (2022) “Hybrid Intrinsic Frequency Machine Learning Approach For Calculation Of Total Arterial Compliance And Aortic Characteristic Impedance From A Single Carotid Waveform In Heart Failure With Preserved Ejection Fraction”. *American Heart Association's Hypertension Scientific Sessions*, San Diego, California, 2022
35. Bilgi C*, Wei H*, Rizzi N, Sampson A, Mallaby M, and **Pahlevan NM**. (2021) “Vortex interactions and fluid mixing in the brain: targeted drug delivery for intraventricular hemorrhage patients”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 74th Annual Meeting, Phoenix, Arizona*
34. **Pahlevan NM**, Amlani F*, King K, Aghilinejad A*. (2021) “The Effects of Left Ventricle Contractility on Aortic-Brain Hemodynamic Coupling”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 74th Annual Meeting, Phoenix, Arizona*
33. Alavi R*, Aghilinejad A*, Wei H*, Niroumandi S*, Wieman S, and **Pahlevan NM**. (2021) “In-vitro coupled left atrioventricular-aortic hemodynamic simulator for systemic circulation”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 74th Annual Meeting, Phoenix, Arizona*

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32. Amlani F*, and **Pahlevan NM**. (2021) “A novel Fourier-based (pseudo) spectral framework for 1D hemodynamics and wave propagation in the entire human circulatory system”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 74th Annual Meeting, Phoenix, Arizona*
31. Niroumandi S*, Alavi R*, and **Pahlevan NM**. (2021) “A machine learning methodology for estimation of vascular characteristics using a single carotid waveform”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 74th Annual Meeting, Phoenix, Arizona*
30. Wei H*, Gilpin M, and **Pahlevan NM**. (2021) “High speed transient laminar flow meter”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 74th Annual Meeting, Phoenix, Arizona*
29. Aghilinejad A*, Wei H*, Magee G, and **Pahlevan NM**. (2021) “Hemodynamically-efficient graft design for endovascular repair in type B aortic dissection”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 74th Annual Meeting, Phoenix, Arizona*
28. Alavi R*, Dai W, RA Kloner, and **Pahlevan NM**. (2021) “A Physics-Based Machine Learning Approach for Instantaneous Classification of Myocardial Infarct Size”. *American Heart Association's Scientific Sessions, Virtual, November 2021*
27. Alavi R*, Liu J*, Ramos M, Hindoyan A, Matthews RV, and **Pahlevan NM**. (2021) “A Hybrid Machine Learning Method for Instantaneous Classification of Left Ventricular Filling Pressure Using Femoral Waveforms”. *American Heart Association's Scientific Sessions, Virtual, November 2021*
26. Liu J* and **Pahlevan NM**. (2021) “Evaluation Of A Non-invasive Left Ventricular Pressure-volume Loop Approximation Method Based On Arterial Blood Pressure Values And Cardiac MRI”. *American Heart Association's Scientific Sessions, Virtual, November 2021*
25. Alavi R*, Dai W, Arechavala RJ, Kleinman MT, RA Kloner, and **Pahlevan NM**. (2021) “Nicotine Delivered by Electronic Cigarette Vapor or Standard Cigarettes Adversely Affects Left Ventricular Systolic Function Measured by Cardiovascular Intrinsic Frequency in Rats”. *American Heart Association's Scientific Sessions, Virtual, November 2021*
24. Alavi R, Dai W, RA Kloner, and **Pahlevan NM**. (2020) “A Hybrid Artificial Intelligence-Intrinsic Frequency Method for Instantaneous Determination of Myocardial Infarct Size”. *American Heart Association's Scientific Sessions, Virtual, November 2020*
23. Mogadam E, Shavelle D, Liu J, Giesler G, Matthews RV, **Pahlevan NM**. (2020) “Validation Of A Non-invasive Approach For The Assessment of Left Ventricular-arterial Coupling Following Transcatheter Aortic Valve Replacement”. *American Heart Association's Scientific Sessions, Virtual, November 2020*
22. **Pahlevan NM**, Alavi R, Ramos M, Hindoyan A, and RV Matthews. (2020) “An Artificial Intelligence Derived Method For Instantaneous Detection Of Elevated Left Ventricular End Diastolic Pressure”. *American Heart Association's Scientific Sessions, Virtual, November 2020*
21. Alavi R, Dai W, Kloner RA, and **Pahlevan NM**. (2019) “A Hybrid Artificial Intelligence-Intrinsic Frequency Method for Instantaneous Detection of Acute Myocardial Infarction”. *American Heart Association's Scientific Sessions, Philadelphia, Pennsylvania, November 2019*.
20. Cooper LL, Rong J, **Pahlevan NM**, Rinderknecht DG, Benjamin EJ, Hamburg NM, Ramachandran VS, Larson MG, Gharib M, and Mitchell GF. (2019) “Intrinsic Frequencies of Carotid Pressure Waveforms Predict Cardiovascular Disease Events: The Framingham Heart Study”. *American Heart Association's Scientific Sessions, Philadelphia, Pennsylvania, November 2019*.

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19. Mogadam E, Giesler G, Matthews RV, **Pahlevan NM**. (2019) “A New Method for Instantaneous and Noninvasive Evaluation of Left Ventricular-Arterial Performance Following Transcatheter Aortic Valve Replacement”. *American Heart Association's Scientific Sessions*, Philadelphia, Pennsylvania, November 2019.
18. Wei H, Herrington C, Cleveland J, Starnes V, & **Pahlevan NM**. (2019) “Artificial Right Atrium Design for Univentricular Heart Patients”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 72nd Annual Meeting, Seattle, WA*
17. Aghilinejad A, Amlani F, King K, & **Pahlevan NM**. (2019) “Optimum heart rate for brain-heart hemodynamic coupling and its clinical relevancy for neurodegenerative diseases”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 72nd Annual Meeting, Seattle, WA*
16. **Pahlevan NM**, Ramos M, and Matthews RV. (2019) “Cardiac Triangle Mapping: A Novel Systems Approach for Noninvasive Evaluation of Left Ventricular End Diastolic Pressure”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 72nd Annual Meeting, Seattle, WA*
15. **Pahlevan NM**, Dai W, and RA Kloner. (2018). “Noninvasive and Instantaneous Diagnostics of Acute Myocardial Infarction Using Intrinsic Frequency Method”. *American Heart Association's Scientific Sessions*, Chicago, Illinois, November 2018
14. **Pahlevan NM**, Ramos M, and RV Matthews. (2018). “A Systems Approach for Noninvasive and Instantaneous Measurement of Left Ventricular End Diastolic Pressure Using Smartphone”. *American Heart Association's Scientific Sessions*. Chicago, Illinois, November 2018
13. Razavi, M. and **NM Pahlevan**. (2017) “Wave Condition Number Is Useful in Predicting Risk for Coronary Heart Disease from Framingham Heart Study Data”. *American Heart Association's Scientific Sessions*, Anaheim CA, November 2017.
12. **Pahlevan NM**, Rinderknecht DG, Tavallali P, Razavi, M., Tran TT, Fong M, Kloner RA, Csete M, and M Gharib. (2016) “A New Noninvasive iPhone Application to Monitor Left Ventricle Ejection Fraction in Heart Failure Patients” *American Heart Association's Scientific Sessions*, New Orleans LA, November 2016 (oral presentation)
11. **Pahlevan NM**. (2017) “Systolic Intrinsic Frequency and Various Measures of Left Ventricle Contractility”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 70th Annual Meeting, Denver, CO*
10. **Pahlevan NM**, Thao TT, Tavallali P, Rinderknecht DG, Csete M, and Gharib M. (2015) “New intrinsic frequency measures of cardiac function vs. cardiac MRI as a gold standard”. *ISMRM 23rd Annual Meeting & Exhibition, 30 May - 05 June 2015, Toronto, Ontario, Canada*.
9. **Pahlevan NM**, Rinderknecht DG, Tavallali P, Petrasek D, Matthews R, and Gharib M. (2014) “Intrinsic Frequency Method for Noninvasive Diagnosis of Left Ventricular Systolic Dysfunction”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 67th Annual Meeting, San Francisco, CA*
8. **Pahlevan NM** and Gharib M. (2012) “Human Aorta Is a Passive Pump”, *American Physical Society-Division of Fluid Dynamics (APS-DFD), 65th Annual Meeting, San Diego, CA*
7. **Pahlevan NM**, Tavallali P, Hou TY, and M Gharib. (2012) “A New Index for Quantification of Left Ventricle-Aorta Coupling”. *Biomedical Engineering Society 2012 Annual Meeting, Atlanta, GA*

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6. **Pahlevan NM** and Gharib M. (2011) “Optimum Heart Rate to Minimize Pulsatile External Cardiac Power”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 64th Annual Meeting, Baltimore, MD*
5. **Falahatpisheh A**, Dueitt B, **Pahlevan NM**, and Kheradvar A. (2011) “3D Characterization of Transmittal Vortex using Defocusing Digital Particle Image Velocimetry”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 64th Annual Meeting, Baltimore, MD*
4. **Pahlevan NM** and Gharib M. (2010) “Aortic Wave Dynamics and its influence on Left Ventricular Workload”. *American Physical Society-Division of Fluid Dynamics (APS-DFD), 63rd Annual Meeting, Long Beach, CA*
3. **Pahlevan NM** and Gharib M. (2010) “Effects of Aortic Wave Dynamics on Left Ventricular Power Requirement” *Biomedical Engineering Society 2010 Annual Meeting, Austin, TX*
2. **Lin BA**, Forouhar AS, **Pahlevan NM**, Anastassiou CA, Grayburn PA, Thomas JD, and Gharib M. (2010) “Color Doppler jet area overestimates volume when multiple jets are present” *American Society of Echocardiography, 21th Annual Scientific Session, June 2010, San Diego, CA*
1. **Pahlevan NM** and Gharib M. (2009) “Effect of Aortic Compliance on Left Ventricular Power Requirement”, *American Physical Society-Division of Fluid Dynamics (APS-DFD), 62nd Annual Meeting, Minneapolis, MN*

Clinical Trials and Clinical Studies (as PI)

4. *Artificial Intelligence Technology for Heart Monitoring Project (AI-HF Monitoring Project)*. 2023-present
 - Location: USC Michelson Center for Convergent Bioscience, Keck School of Medicine of USC
 - Principle Investigators: **Niema Pahlevan PhD**, Ajay Vaidya MD
 - Collaborating investigators: Aaron Wolfson MD (USC)
3. *Noninvasive Measurement of Left Ventricle End Diastolic Pressure (LVEDP)*. 2018-present
 - Location: Keck Hospital of USC
 - Principle Investigators: **Niema Pahlevan PhD**, Ray Matthews MD (Keck, USC).
2. *Noninvasive Hemodynamic Monitoring of Pediatric Patients*. 2017-present
 - Location: Children’s Hospital Los Angeles
 - Principle Investigators: **Niema Pahlevan PhD**, Andrew Cheng MD (CHLA, USC)
1. *iPhone Measurement of Left Ventricle Ejection Fraction (EF)*. 2014-2020
 - Location: Huntington Medical Research Institute
 - Principle Investigators: **Niema Pahlevan PhD**
 - Collaborating investigators: Michael Fong MD (USC), Robert Kloner MD PhD (HMRI, USC)

Mentoring

Ph.D. Students

10. Arian Aghilinejad, Aerospace and Mechanical Engineering, USC, 2018-2023 (*defended on 03/09/2023*)
 - Phi Kappa Phi Student Recognition Award; University of Southern California (2023)
 - American Heart Association (AHA) Predoctoral Fellowship Award (2022)
 - Alfred E. Mann Innovation in Engineering Doctoral Fellowship Award (2020)
 - Finalist (top four) for Viterbi School of Engineering best doctoral dissertation (William F. Ballhaus, Jr. Prize)
 - First position after my lab: Postdoctoral Scholar at California Institute of Technology (Caltech)

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9. Rashid Alavi, Aerospace and Mechanical Engineering, USC, 2018-2023 (*defended on 6/13/2023*)
 - American College of Cardiology Young Investigator Award finalist (*honorable mention; top 5 finalist*) (2023)
 - Phi Kappa Phi Student Recognition Award; University of Southern California (2023)
 - James Boswell Postdoctoral Award; California Institute of Technology-Huntington Medical Research Institutes(2023)
 - First position after my lab: James Boswell Postdoctoral Scholar at California Institute of Technology (Caltech)
8. Heng Wei, Aerospace and Mechanical Engineering, USC, 2018-present
7. Coskun Bilgi, Aerospace and Mechanical Engineering, USC, 2020-present
6. Soha Niroumandi, Aerospace and Mechanical Engineering, USC, 2021-present
 - American Heart Association (AHA) Predoctoral Fellowship Award (2024)
 - American Heart Association Scientific Sessions 2023 Travel Grant
5. Deniz Rafieianzab, Aerospace and Mechanical Engineering, USC, 2021-present
4. Jiajun Li, Aerospace and Mechanical Engineering, USC, 2023-present
3. Haojie Geng, Aerospace and Mechanical Engineering, USC, 2023-present.
2. Mohammad Shojaeifard, Aerospace and Mechanical Engineering, USC, will start on 8/15/2024.
1. Haonan Meng, Aerospace and Mechanical Engineering, USC, 2023-present.

Postdoctoral Scholars

2. Faisal Amlani PhD, Aerospace and Mechanical Engineering, USC, 2020-2022
 - First position after my lab: Assistant professor at *CNRS chargé de recherche, France* (2022)
1. Jing Liu PhD, Aerospace and Mechanical Engineering, USC, 2019-2021
 - First position after my lab: *Analog Devices, Inc*

M.S. Students

4. Jingyi Kang, Aerospace and Mechanical Engineering, USC, 2017-2018
3. Alberto Paredes, Aerospace and Mechanical Engineering, USC, 2020-2022
2. Haojie Geng, Aerospace and Mechanical Engineering, USC, 2021-2022
1. Jiajun Li, Aerospace and Mechanical Engineering, USC, 2021-2023

Undergraduates

5. Elena Lottich, Biomedical Engineering, USC, 2021-present
4. Bryson Rogers, Aerospace and Mechanical Engineering, USC, 2020-2023
3. Mahmood Alfayoumi, Aerospace and Mechanical Engineering, USC, 2019-2022
2. Anoosha Zaki, Human Biology, Dornsife College of Letters, Arts and Sciences, 2019-2020
1. Yasaman Yasari, Health Promotion and Disease Prevention Studies, Keck School of Medicine, 2018-2019

Visiting Undergraduates

3. Christie Huang, Mechanical Engineering, Caltech, Summer 2019
2. Jessica Torrey, Engineering, Harvey Mudd, Summer 2019
1. Soren Cole, HMRI, 2017-2019

Fellows/Residents

3. Amara (Sandra) Ogbonnaya MD, research associate, USC 2017-2018
2. Jennifer Miller MD, PhD, pediatric cardiology fellow, CHLA-USC 2019-2020
1. Emad Mogadam MD, MS, medical resident, HMM-USC 2018-2020

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Teaching**New course development at USC**

AME 536 Biofluid Mechanics: Transport and Circulatory Systems (4 units)

-Cross list: BME 540

AME 416 Mechanics and Transport in Medicine and Biology (4 units)

AME 526 Introduction to Mathematical Methods in Engineering II (4 units)

-Based on an already existed 3-unit course

Instructor: University of Southern California (USC)

AME 416 Mechanics and Transport in Medicine and Biology (4 units), Spring 23, Spring 24

AME 536 Biofluid Mechanics: Transport and Circulatory Systems (4 units): Fall 20, Fall 22

AME 526 Introduction to Mathematical Methods in Engineering II (4 units): Spring 20, Spring 21, Spring 22

AME 499 Mechanics in Medicine and Biology (3 units, *New Course*): Fall 19

AME 599 Cardiovascular Biofluid Mechanics (3 units, *New Course*): Spring 19

AME 526 Engineering Analytical Methods (3 units): Fall, 17, Fall 18

Instructor: California Institute of Technology (Caltech)

MedE/BE/Ae 243 Biological Flows: Transport and Circulatory Systems (9 units): Winter 15, winter 216:

Guest Lecturer

Cardiovascular Devices, UC Irvine, 2021

Introduction to Clinical Physiology and Pathophysiology for Engineers (MedE 101), Caltech, 2020

Cardiovascular Devices, UC Irvine, 2020

Cardiovascular Devices, UC Irvine, 2019

Cardiovascular Devices, UC Irvine, 2018

Principles and Design of Medical Devices, Caltech, 2016

Principles and Design of Medical Devices, Caltech, 2015

Principles and Design of Medical Devices, Caltech, 2014

Bioinspired Engineering, Caltech, 2014

External Services:**National Peer Review Grant Committees**

2. National Science Foundation grant review panel member
1. American Heart Association peer review grant committees

Editorial

6. Executive Editorial Board: *Physiological Measurement* (2024-present)
5. Academic Editor and Editorial Board: *PLOS ONE* (2022-present)
4. Editorial Board: *Scientific Reports-Nature* (2023-present)
3. Guest editor: Advanced Modeling and Simulation in Engineering Sciences (2022-present)
2. Editorial Board: *Frontiers in Physiology* (2022-present)
1. Editorial Board: *Frontiers in Bioengineering and Biotechnology* (2020-present)

Journal Reviewer**Engineering Journals:**

1. *Physics of Fluids*
2. *European Journal of Mechanics-B/Fluids*
3. *Mechanics Research Communications*
4. *Fluids*

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5. *International Journal for Numerical Methods in Biomedical Engineering*

Clinical/Physiology Journals:

6. *Journal of the American College of Cardiology (JACC)*
7. *Circulation: Heart Failure*
8. *Cardiology*
9. *European Heart Journal Open*
10. *Journal of Magnetic Resonance Imaging*
11. *Journal of Clinical Medicine*
12. *The Journal of Physiology*

Interdisciplinary Journals:

13. *Journal of Biomechanics*
14. *Annals of Biomedical Engineering*
15. *Philosophical Transactions of the Royal Society B*
16. *Journal of the Royal Society Interface*
17. *IEEE Transactions on Biomedical Engineering*
18. *IEEE Journal of Biomedical and Health Informatics*
19. *IEEE Access*
20. *Frontiers in Bioengineering and Biotechnology*
21. *Physiological Measurement*
22. *Journal of Biomechanical Engineering*
23. *PLoS ONE*
24. *Computers in Biology and Medicine*
25. *Biomedical Signal Processing and Control*
26. *Physics in Medicine & Biology*

Professional Memberships

American Heart Association, 2010-present

American Physical Society - Division of Fluid Dynamics, 2009-present