

I. Book Editor

- *Modeling and Simulation of Turbulent Mixing and Reaction*, Eds: D. Livescu, A.G. Nouri, F. Bataglia and P. Givi, in press, Springer Singapore, 2020, DOI: 10.1007/978-981-15-2643-5. ISBN: 978-981-15-2643-5.

II. Journal Articles (invited papers are shown with *)

A. Review Articles

1. * Livescu, D. “Turbulence with large thermal and compositional density fluctuations,” *Annual Review of Fluid Mechanics* **52**, 309-341, 2020.
2. * Nouri, A.G., Givi, P. and Livescu, D. “Modeling and simulation of turbulent nuclear flames in type Ia supernovae,” *Progress in Aerospace Sciences* **108**, 156-179, 2019.
3. * Livescu, D. “Numerical simulations of two-fluid turbulent mixing at large density ratios and applications to the Rayleigh-Taylor instability,” *Philosophical Transactions of the Royal Society A* **371**, 20120185, 2013.

B. Regular Research Articles

1. Chapurin, O., Koshkarov, O., Dlezanno, G.L., Roytershteyn, V., Brady, P., Chiodi, R., Harnish, C. and Livescu, D. “Hybrid particle-spectral method for kinetic plasma simulations,” *Physics of Plasmas* **31**, 023903, 2024.
2. Liu, Y., Babaee, H., Givi, P., Chelliah, H., Livescu, D. and Nouri, A. “Skeletal reaction models for methane combustion,” *Fuel* **357**, 129581, 2024.
3. Lin, Y.T., Tian, Y., Perez, D. and Livescu, D. “Regression-based projection for learning Mori-Zwanzig operators,” *SIAM Journal on Applied Dynamical Systems* **22**(4), 2890-2926, 2023.
4. Karra, S., Mehana, M., Lubbers, N., Chen, Y., Diaw, A., Santos, J.E., Pachalieva, A., Pavel, R.S., Haack, J.R., McKerns, M., Junghans, C., Kang, Q., Livescu, D., Germann, T.C. and Viswanathan, H.S. “Predictive scale-bridging simulations through active learning,” *Scientific Reports* **13**:16262, 2023.
5. Majumder, S., Sharma, B., **Livescu, D.** and Girimaji, S. “Compressible Rayleigh-Taylor instability subject to isochoric initial background state,” *Physics of Fluids* **35**, 094113, 2023. **Cover picture for the issue.**

6. Tian, Y., Woodward, M., Stepanov, M.G., Fryer, C., Hyett, C., **Livescu, D.** and Chertkov, M. “Lagrangian large eddy simulations via physics-informed machine learning,” *Proceedings of the National Academy of Sciences* **120**, 34, 2023.
7. Woodward, M., Tian, Y., Hyett, C., Fryer, C., Stepanov, M., **Livescu, D.** and Chertkov, M. “Physics informed machine learning with Smoothed Particle Hydrodynamics: Hierarchy of reduced Lagrangian models of turbulence,” *Physical Review Fluids* **8**, 054602, 2023. **Paper featured at Physical Review Journal Club on June 14, 2023.**
8. Wei, T., Liu, X., Li, Z. and Livescu, D. “Planar turbulent wakes under pressure gradient: integral and self-similarity analyses,” *Physics of Fluids* **35**, 045149, 2023.
9. Harnish, C., Dalessandro, L., Matous, K. and Livescu, D. “An adaptive wavelet method for nonlinear partial differential equations with applications to dynamic damage modeling,” *Journal of Computational Physics* **479**, 112002, 2023.
10. Corbetta, A., Gabbana, A., Gyrya, V., Livescu, D., Prins, J. and Toschi, F. “Towards learning Lattice Boltzmann collision operators,” *European Physical Journal E* **46**:10, 2023. **Cover picture for the issue.**
11. Keenan, B.D., Smith, C., Livescu, D., Haack, J.R. and Pavel, R.S. “Simulations of strong steady-state plasma shock in a warm dense matter regime,” *Physics of Plasmas* **30**, 012706, 2023. **Editors’ Pick.**
12. Mohan, A.T., Lubbers, N., Chertkov, M. and Livescu, D. “Embedding hard physical constraints in neural network coarse-graining of three-dimensional turbulence,” *Physical Review Fluids* **8**, 014604, 2023.
13. Pachalieva, A., Pavel, R.S., Santos, J.E., Diaw, A., Lubbers, N., Mehana, M., Haack, J.R., Viswanathan, H.S., Livescu, D., Germann, T.C. and Junghans, C. “GLUE Code: A framework handling communication and interfaces between scales,” *Journal of Open Source Software* **7**(80), 4822, 2022. <https://doi.org/10.21105/joss.04822>.
14. Kaiser, B. E., Saenz, J.A., Sonnewald, M. and Livescu, D. “Automated identification of dominant physical processes,” *Engineering Applications of Artificial Intelligence* **116**, 105496, 2022.
15. Wei, T., Li, Z. and Livescu, D. “Scaling patch analysis of planar turbulent mixing layers,” *Physics of Fluids* **34**, 115120, 2022.
16. Sharan, N., Brady, P. and Livescu, D. “High-order dimensionally-split Cartesian cut-cell method for non-dissipative schemes,” *Journal of Computational Physics* **464**, 111341, 2022.
17. Wei, T., Livescu, D. and Liu, X. “Scaling patch analysis of planar turbulent wakes,” *Physics of Fluids* **34**, 065116, 2022.
18. Sharan, N., Brady, P. and Livescu, D. “Time stability of strong boundary conditions in finite-difference schemes for hyperbolic systems,” *SIAM Journal on Numerical Analysis* **60**(3), 1331-1362, 2022.

19. Wong, M.L., Baltzer, J., Livescu, D. and Lele, S.K. "Analysis of second-moments and their budgets for Richtmyer-Meshkov instability and variable-density turbulence induced by re-shock," *Physical Review Fluids* **7**, 044602, 2022.
20. Nouri, A.G., Babaei, H., Givi, P., Chelliah, H.K. and Livescu, D. "Skeletal model reduction with forced optimally time dependent modes," *Combustion and Flame* **235**, 111684, 2022.
21. Tian, Y., Lin, Y.T., Anghel, M. and Livescu, D. "Data-driven learning of Mori-Zwanzig operators for isotropic turbulence," *Physics of Fluids* **33**, 125118, 2021.
22. Lin, Y.T., Tian, Y., Livescu, D. and Anghel, M. "Data-driven learning for the Mori-Zwanzig formalism: A generalization of Koopman learning framework," *SIAM Journal on Applied Dynamical Systems* **20**, 2558-2601, 2021.
23. Fryer, C.N., Karpov, P. and Livescu, D. "Understanding convection in core-collapse supernovae engine," *Astronomy Reports* **65**, 937-941, 2021.
24. Tian, Y., Livescu, D. and Chertkov, M. "Physics-informed machine learning of Lagrangian dynamics of velocity gradient tensor," *Physical Review Fluids* **6**, 094607, 2021.
25. Schlick, T., Portillo-Ledesma, S., Blaszczyk, M., Dalessandro, L., Ghosh, S., Hackl, K., Harnish, C., Kotha, S., Livescu, D., Masud, A., Matous, K., Moyeda, A., Oskay, C. and Fish, J. "A multiscale vision – illustrative applications from biology to engineering," *International Journal for Multiscale Computational Engineering* **19**(2), 39-73, 2021.
26. Harnish, C., Dalessandro, L., Matous, K., and Livescu, D. "A multiresolution adaptive wavelet method for nonlinear partial differential equations," *International Journal for Multiscale Computational Engineering* **19**(2), 29-37, 2021.
27. Wei, T. and Livescu, D. "Scaling patch analysis of turbulent planar plume," *Physics of Fluids* **33**, 055101, 2021. **Featured Article.**
28. Wei, T. and Livescu, D. "Scaling of the mean transverse flow and Reynolds shear stress in turbulent plane jet," *Physics of Fluids* **33**, 035142, 2021.
29. * Saenz, J., Aslangil, D. and Livescu, D. "Filtering, averaging and scale dependency in homogeneous variable-density turbulence," *Physics of Fluids* **33**, 025115, 2021.
30. Livescu, D., Wei, T. and Brady, P.T. "Rayleigh-Taylor instability with gravity reversal," *Physica D* **417**, 132832, 2021.
31. Portwood, G. D., Nadiga, B. T., Saenz, J. A. and Livescu, D. "Interpreting neural network models of residual scalar flux," *Journal of Fluid Mechanics* **907**, A23, 2021.
32. Brady, P.T. and Livescu, D. "Foundations for high-order, conservative cut-cell methods: stable discretizations on degenerate meshes," *Journal of Computational Physics* **426**, 109794, 2021.
33. Pulido, J., Dutra, R., Livescu, D. and Hamann, B. "Multiresolution classification of turbulence features in image data through machine learning," *Computers & Fluids* **214**, 104770, 2021.

34. * Mohan, A.T., Tretiak, D., Chertkov, M. and Livescu, D. "Spatio-temporal deep learning models of 3D turbulence with physics informed diagnostics," *Journal of Turbulence* **21**:9-10, 484-524, 2020.
35. Diaw, A., Barros, K., Haack, J., Junghans, C., Keenan, B., Li, Y.W., Livescu, D., Lubbers, N., McKerns, M., Pavel, R.S., Rosenberger, D., Sagert, I., and German, T. "Multiscale plasma simulations using active learning," *Physical Review E* **102**, 023310, 2020.
36. Baltzer, J. and Livescu, D. "Variable-density effects in incompressible non-buoyant shear-driven turbulent mixing layer," *Journal of Fluid Mechanics* **900**, A16, 2020.
37. Aslangil, D., Livescu, D. and Banerjee, A. "Effects of Atwood and Reynolds numbers on the evolution of buoyancy-driven homogeneous variable-density turbulence," *Journal of Fluid Mechanics* **895**, A12, 2020.
38. Aslangil, D., Livescu, D. and Banerjee, A. "Variable-density buoyancy-driven turbulence with asymmetric initial density distribution," *Physica D* **406**, 132444, 2020.
39. Kurien, S., Doss, F., Livescu, D., and Flippo, K. "Extracting a mixing parameter from 2D radiographic imaging of variable-density turbulent flow," *Physica D* **405**, 132354, 2020.
40. Maulik R., Mohan, A., Lusch, B., Madireddy, S. and Livescu, D., "Time-series learning of latent-space dynamics for reduced-order model closure," *Physica D* **405**, 132368, 2020.
41. Bian, X., Aluie, H., Zhao, D., Zhang, H. and Livescu, D., "Revisiting the late-time growth of single-mode Rayleigh–Taylor instability and the role of vorticity," *Physica D* **403**, 132250, 2020.
42. Tian, Y., Jaber, F.A. and Livescu, D. "Density effects on the post-shock turbulence structure and dynamics," *Journal of Fluid Mechanics* **880**, 935-968, 2019.
43. Wong, M.L., Livescu, D. and Lele, S.K. "High resolution Navier-Stokes simulations of Richtmyer-Meshkov instability with reshock," *Physical Review Fluids* **4**, 104609, 2019.
44. Wieland, S.A., Hamlington, P.E., Reckinger, S.J. and Livescu, D. "Effects of isothermal stratification strength on vorticity dynamics for single-mode compressible Rayleigh-Taylor instability," *Physical Review Fluids* **4**, 093905, 2019.
45. Nadiga, B. T., Jiang, C. and Livescu, D. "Leveraging Bayesian analysis to improve accuracy of approximate models," *Journal of Computational Physics* **394**, 280-297, 2019.
46. Bassenne M., Esmaily M., Livescu D., Moin P. and Urzay J. "Dynamic spectrally-enriched LES subgrid-scale modeling for preferential concentration of inertial particles in turbulence," *International Journal of Multiphase Flow* **116**, 270-280, 2019.
47. Brady, P. T. and Livescu, D. "Coefficient datasets for high-order, stable, and conservative boundary schemes for central and compact finite differences," *Data in Brief* **25**, 104086, 2019.
48. Brady, P. T. and Livescu, D. "High-order, stable, and conservative boundary schemes for central and compact finite differences," *Computers & Fluids* **183**, 84-101, 2019.

49. Li, Z. and Livescu, D. "High-order two-fluid plasma solver for direct numerical simulations of plasma flows with full transport phenomena," *Physics of Plasmas* **26**(1), 012109, 2019. **Editors' Pick.**
50. Pal, N., Kurien, S., Clark, T., Aslangil, D. and Livescu, D. "Two-point spectral model for variable-density homogeneous turbulence," *Physical Review Fluids* **3**, 124608, 2018.
51. Daniel, D., Livescu, D. and Ryu, J. "Reaction analogy based forcing for incompressible scalar turbulence," *Physical Review Fluids* **3**, 094602, 2018.
52. Pulido, J. Livescu, D., Kanov, K., Burns, R., Canada, C., Ahrens, J. and Hamann, B. "Remote visual analysis of large turbulence databases at multiple scales," *Journal of Parallel Distributed Computing* **120**, 115-126, 2018.
53. Harnish, C., Matous, K., and Livescu, D. "Adaptive wavelet algorithm for solving nonlinear initial-boundary value problems with error control," *International Journal for Multiscale Computational Engineering* **16**(1), 19-43, 2018.
54. Nouri, A.G., Nik, M.B., Givi, P., Livescu, D. and Pope, S.B. "Self-contained density function," *Physical Review Fluids* **2**, 094603, 2017.
55. Tian, Y., Jaber, F.A., Li, Z., and Livescu, D. "Numerical study of variable density turbulence interacting with a normal shock wave," *Journal of Fluid Mechanics* **829**, 551-588, 2017.
56. Gerashchenko, S. and Livescu, D. "Viscous effects on the Rayleigh-Taylor instability with background temperature gradient," *Physics of Plasmas* **23**, 072121, 2016.
57. Livescu, D. and Ryu, J. "Vorticity dynamics after the shock-turbulence interaction," *Shock Waves* **26**, 241-251, 2016.
58. Pulido, J., Livescu, D., Woodring, J., Ahrens, J. and Hamann, B. "Survey and analysis of multiresolution methods for turbulence data," *Computers & Fluids* **125**, 39-58, 2016.
59. Reckinger, S.J., Livescu, D. and Vasilyev, O.V., "Comprehensive numerical methodology for Direct Numerical Simulations of the compressible Rayleigh-Taylor instability," *Journal of Computational Physics* **313**, 181-208, 2016.
60. Schwarzkopf, J.D., Livescu, D., Baltzer, J. R., Gore, R.A and Ristorcelli, J.R. "A two-length scale turbulence model for single-phase multi-fluid mixing," *Flow Turbulence and Combustion* **96**, 1-43, 2016.
61. Ryu, J. and Livescu, D. "Turbulence structure behind the shock in canonical shock-vortical turbulence interaction," *Journal of Fluid Mechanics* **756**, R1, 2014.
62. Andrews, M.J., Youngs, D.L., Livescu, D. and Wei, T. "Computational studies for a two-dimensional Rayleigh-Taylor driven mixing layer for a tilted-rig," *ASME Journal of Fluids Engineering*, **136**, 091212, 2014.
63. Wei, T. and Livescu, D. "Late-time quadratic growth in single-mode Rayleigh-Taylor instability," *Physical Review E* **86**, 046405, 2012.

64. Schwarzkopf, J.D., Livescu, D., Gore, R.A., Rauenzahn, R.M. and Ristorcelli, J.R. "Application of a second-moment closure model to mixing processes involving multi-component miscible fluids," *Journal of Turbulence* **12**, N49, 2011.
65. Livescu, D., Wei, T. and Petersen, M.R. "Direct Numerical Simulations of Rayleigh-Taylor instability", *Journal of Physics: Conference Series* **318**, 082007, 2011.
66. Livescu, D., Ristorcelli, J.R., Petersen M.R. and Gore, R.A. "New phenomena in variable-density Rayleigh-Taylor turbulence," *Physica Scripta* **T142**, 014015, 2010.
67. Reckinger, S. J., Livescu, D., and Vasilyev, O. V. "Adaptive wavelet collocation method simulations of Rayleigh-Taylor instability," *Physica Scripta* **T142**, 014064, 2010.
68. * Ristorcelli, J.R. and Livescu, D. "Correcting the anisotropic gradient transport of k ," *Flow Turbulence and Combustion* **85**, 443-455, 2010.
69. Petersen, M.R. and Livescu, D. "Forcing for statistically stationary compressible isotropic turbulence," *Physics of Fluids* **22**(11), 116101, 2010.
70. Livescu, D., Ristorcelli, J.R., Gore, R.A., Dean, S.H., Cabot, W. and Cook, A.W. "High-Reynolds number Rayleigh-Taylor turbulence," *Journal of Turbulence* **10**, N13, 2009.
71. Yu, H. and Livescu, D. "Rayleigh-Taylor instability in cylindrical geometry with compressible fluids," *Physics Fluids* **20**(10), 104103, 2008.
72. Livescu, D. and Ristorcelli, J.R. "Variable-density mixing in buoyancy-generated turbulence," *Journal of Fluid Mechanics* **605**, 145-180, 2008.
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74. Nadiga, B.T. and Livescu, D. "Instability of the perfect subgrid model in implicit-filtering large eddy simulation of geostrophic turbulence," *Physical Review E* **75**(4), 046303, 2007.
75. Ristorcelli, J.R. and Livescu, D. "Decay of Isotropic Turbulence: Fixed Points and Solutions for Non-Constant $G \sim R_\lambda$ Palinstrophy," *Physics of Fluids*, **16**(9), 3487-3490, 2004.
76. Livescu, D. and Madnia, C.K. "Small Scale Structure of Homogeneous Turbulent Shear Flow," *Physics of Fluids* **16**(8), 2864-2876, 2004.
77. Rubinstein, R., Clark, T.T., Livescu, D. and Luo, L.S. "Time-Dependent Isotropic Turbulence," *Journal of Turbulence* **5** 011, 2004.
78. Livescu, D. "Compressibility Effects on the Rayleigh-Taylor Instability Growth between Immiscible Fluids," *Physics of Fluids* **16**(1), 118-127, 2004.
79. Pedial-Collins, N.T., VanderHeyden, W.B., Zhang, D.Z., Dendy, E.D. and Livescu, D. "Parallel Operation of CartaBlanca on Shared and Distributed Memory Computers," *ACM Concurrency and Computation: Practice and Experience* **16**, 61-77, 2004.

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82. Livescu, D., Jaber, F.A. and Madnia, C.K. "Passive Scalar Wake Behind a Line Source in Grid Turbulence," *Journal of Fluid Mechanics* **416**, 117-149, 2000.

B. Editorials, book reviews, and comments

1. Banerjee, A., Ramaprabhu, P., Ranjan, D., Livescu, D. and Schilling, O. "Special Issue: To Commemorate the Legacy of Malcolm J. Andrews – Scientist, Educator, and Leader," *ASME Journal of Fluids Engineering* 2020.
2. Livescu, D. "Applied Computational Aerodynamics. A modern Engineering approach," *AIAA Journal* **54**(11), 3697, 2016.
3. Schilling, O., Livescu, D., Prestridge, K.P. and Ramaprabhu, P. "The 14th International Workshop on the Physics of Compressible Turbulent Mixing," *ASME Journal of Fluids Engineering* **138**(7), 070301, 2016.
4. Livescu, D. "Comment on "Compressibility effects on the Rayleigh–Taylor instability of three layers" [Phys. Fluids 19, 096103 (2007)]," *Physics Fluids* **20**(2), 029103, 2008.
5. Livescu, D. "Reply to Response to "Comment on 'Compressible Rayleigh-Taylor Instabilities in Supernova Remnants" [Physics of Fluids 16, 4661, (2004)]," *Physics of Fluids* **17**(8), 070101, 2005.
6. Livescu, D. "Comment on 'Compressible Rayleigh-Taylor Instabilities in Supernova Remnants' [Phys. of Fluids 16, 4661, (2004)]," *Physics of Fluids* **17**(6), 069101, 2005.

III. Book Chapters

1. Baltzer, J.R. and Livescu, D. "Low-speed turbulent shear-driven mixing layers with large thermal and compositional density variations," in *Modeling and Simulation of Turbulent Mixing and Reaction*, pp. 1-24, Editors: D. Livescu, A.G. Nouri, F. Bataglia and P. Givi, Springer Singapore, 2020, https://doi.org/10.1007/978-981-15-2643-5_1.
2. Tian, Y., Jaber, F.A. and Livescu, D. "Shock-turbulence interaction in variable density flows," in *Modeling and Simulation of Turbulent Mixing and Reaction*, pp. 69-92, Editors: D. Livescu, A.G. Nouri, F. Bataglia and P. Givi, Springer Singapore, 2020, https://doi.org/10.1007/978-981-15-2643-5_4.
3. Aslangil, D., Livescu, D. and Banerjee, A. "Flow regimes in buoyancy-driven homogeneous variable-density turbulence," in *Progress in Turbulence VIII*, pp. 235-240, Editors: R. Orlu et al., *Springer Proc. in Physics* **226**, 2019, https://doi.org/10.1007/978-3-030-22196-6_37.

4. Tian, Y., Jaber, F. and Livescu, D. "Shock propagation in media with non-uniform density," in *31st International Symposium on Shock Waves 1*, pp. 1167-1175, Editors: A. Sasoh, T. Aoki and M. Katayama, Springer, Cham, 2019, https://doi.org/10.1007/978-3-319-91020-8_141.
5. Livescu, D. and Li, Z. "Subgrid-scale backscatter after the shock turbulence interaction," *AIP Conference Proceedings* Vol. 1793 (1), 150009, Editors: R. Chau, T. Germann, I. Oleynik, S. Peiris, R. Ravelo and T. Sewel, 2017, <http://dx.doi.org/10.1063/1.4971738>.
6. Tian, Y., Jaber, F.A., Li, Z. and Livescu, D. "Numerical simulations of multi-fluid shock-turbulence interaction," *AIP Conference Proceedings* Vol. 1793 (1), 150010, Editors: R. Chau, T. Germann, I. Oleynik, S. Peiris, R. Ravelo and T. Sewel, 2017, <http://dx.doi.org/10.1063/1.4971739>.
7. Ryu, J. and Livescu, D. "Direct Numerical Simulations of isotropic turbulence interacting with a shock wave," *29th International Symposium on shock waves*, Vol. 2, pp. 1421-1428, Editors: Riccardo Bonazza and D. Ranjan, Springer, Switzerland, 2015.
8. Mohd-Yusof, J., Livescu, D. and Kelley T. M. "Adapting the CFDNS compressible Navier-Stokes solver to the Roadrunner architecture," in *Parallel Computational Fluid Dynamics, Recent Advances and Future Directions*, pp. 95-109, Editor: R. Biswas, DESTech Publications, Lancaster, PA, 2010.
9. Livescu, D. and Ristorcelli, J.R. "Mixing asymmetry in variable-density turbulence," in *Advances in Turbulence XII*, Editor: B. Eckhardt, Springer Proc. in Physics 132, 545-548, 2009.
10. Rubinstein, R., Bos, W.R.T., Livescu, D. and Woodruff, "Closure models for inhomogeneous turbulence," in *Advances in Turbulence XII*, Editor: B. Eckhardt, Springer Proc. in Physics 132, 767-770, 2009.
11. Livescu, D. and Ristorcelli, J.R. "Mixing Characteristics in Buoyancy-Driven Turbulence," in *Advances in Turbulence XI*, Editors: J.M.L.M. Palma and A. Silva Lopes, Springer Proc. in Physics 117, 544-546, 2007.
12. Livescu, D. and Madnia, C.K. "Non-Premixed Flame-Turbulence Interaction in Compressible Turbulence," in *Advances in Turbulence IX*, Editors: I.P. Castro and P.E. Hancock, CIMNE, Barcelona, 809-812, 2002.
13. Livescu, D. and Madnia, C.K. "Compressibility Effects on the Scalar Mixing in Reacting Homogeneous Turbulence," in *Turbulent Mixing and Combustion*, Editors: A. Pollard and S. Candel, Kluwer Academic Publishers, 125-136, 2002.
14. Livescu, D. and Madnia, C.K. "Anisotropy in Reacting Compressible Turbulent Shear Flow," in *DNS/LES Progress and Challenges*, Editors: C. Liu, L. Sakell, and T. Beutner, Greyden Press, 2001.

IV. Peer-reviewed Conferences (invited talks are shown with *)

1. Mohan, A., Chakrabarti, S., Gatoinde, D. and Livescu, D. "Full trajectory optimizing operator inference for reduced-order modeling using differentiable programming," to be presented at the *European Turbulence Conference 18 (ETC18)*, Valencia, Spain, September 6-8, 2023.

2. Chiodi, R., Nguyen-Fotiadis, N., McKerns, M., Sornborger, A. and Livescu, D. "Machine learning flux-limiters for complex compressible flows," presented at the 17th U.S. National Congress on Computational Mechanics, Albuquerque, NM, July 23-27, 2023.
3. Woodward, M., Tian, Y., Fryer, C.L., Stepanov, M., Livescu, D., and Chertkov, M. "Physics-informed machine learning for reduced Lagrangian modeling of turbulence: Lagrangian LES," presented at the *Platform for Advanced Scientific Computing Conference (PASC23)*, Davos, Switzerland, June 25-28, 2023.
4. Woodward, M., Tian, Y., Lin, Y.T., Mohan, A., Hader, C., Fasel, H., Chertkov, M. and Livescu, D. "Data-driven Mori-Zwanzig: *Reduced Order Modeling of Sparse Sensor Measurements for Boundary Layer Transition*," AIAA paper 2023-4256 presented at the *AIAA Aviation 2023*, San Diego, CA, June 12-16, 2023.
5. Lin, Y.T., Tian, Y., Perez, D. and Livescu, D. "Regression-based projection for learning Mori-Zwanzig operators," presented at the *2023 SIAM Conference on the Application of Dynamical Systems (DS23)*, Portland, OR, May 14-18, 2023.
6. * Brady, P.T., Livescu, D., Harnish, C. and Sharan, N. "High-order embedded boundary methods for high fidelity flow simulations," *keynote talk* at the *22nd Computational Fluids Dynamics Conference (CFC2023)*, Cannes, France, April 25-28, 2023.
7. Woodward, M., Tian, Y., Mohan, A., Lin, Y.T., Hader, C., Fasel, H., Chertkov, M. and Livescu, D. "Data-Driven Mori-Zwanzig: Approaching a Reduced Order Model for Hypersonic Boundary Layer Transition," AIAA paper 2023-1624 presented at the *AIAA Science and Technology Forum and Exhibition 2023*, January 23-27, 2023.
8. Matous, K., Harnish, C., Dalessandro, L. and Livescu, D. "A multiresolution adaptive wavelet method for nonlinear partial differential equations," presented at *USACM Thematic Conference on Meshfree and Novel Finite Elements with Applications (MFEM)*, Berkeley, CA, September 25-27, 2022.
9. * Livescu, D. "Turbulent mixing in flows with large density variations," plenary talk at the *17th International Symposium on the Physics of Compressible Turbulent Mixing*, Atlanta, GA, July 18-22, 2022.
10. Li, Z. and Livescu, D. "Numerical Study of Plasma Rayleigh-Taylor Instability with Realistic Transport Phenomena," presented at the *17th International Symposium on the Physics of Compressible Turbulent Mixing*, Atlanta, GA, July 18-22, 2022.
11. Cherg, K., Lele, S.K. and Livescu, D. "Heat Transfer and Variable Transport Property Effects on the Compressible Rayleigh-Taylor Instability," presented at the *17th International Symposium on the Physics of Compressible Turbulent Mixing*, Atlanta, GA, July 18-22, 2022.
12. Wong, M.L., Baltzer, J.R., Livescu, D. and Lele, S.K. "Study of turbulence statistics and transport for Richtmyer-Meshkov instability with re-shock," presented at the *17th International Symposium on the Physics of Compressible Turbulent Mixing*, Atlanta, GA, July 18-22, 2022.
13. Aslangil, D., Livescu, D. and Banerjee, A. "Different initial composition ratio effects on variable-density turbulent mixing," presented at the *17th International Symposium on the Physics of*

Compressible Turbulent Mixing, Atlanta, GA, July 18-22, 2022.

14. Brady, P.T. and Livescu, D. “High-order cut-cell methods for high fidelity flow simulations,” paper ICCFD11-2301 presented at the *International Conference on Computational Fluid Dynamic (ICCF11)*, Maui, HI, July 11-15, 2022.
15. Nouri, A.G., Babae, H., Givi, P. and Livescu, D. “Skeletal Kinetics Reduction for Type Ia Supernova,” presented at the *18th International Conference on Numerical Combustion*, San Diego, CA, May 8-11, 2022.
16. Chakarbarti, S., Gatoinde, D., Mohan, A. and Livescu, D. “Galerkin reduced order models for compressible flows with differentiable programming,” AIAA paper 2022-0373 presented at the *AIAA Science and Technology Forum and Exhibition 2022*, January 3-7, 2022.
17. Mohan, A.T, Nagarajan, K. and Livescu, D. “Learning Galerkin models of turbulence with differentiable programming,” presented at the *1st IACM Conference on Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering, and Technology*, San Diego, CA, September 26-29, 2021.
18. Aslangil, D., Livescu, D. and Banerjee, A. “Evolution of the density gradients in buoyancy driven homogeneous variable density turbulence,” presented at the *25th International Congress of Theoretical and Applied Mechanics*, virtual event (formerly Milan, Italy), August 22-27, 2021.
19. Sharan, N., Natarajan, M., Brady, P.T. and Livescu, D. “A deep learning framework for derivation of time-stable difference schemes”, AIAA paper 2021-2727 presented at the *AIAA Aviation Forum 2021*, virtual event, August 2-5, 2021.
20. Lin, Y.T., Tian, Y., Livescu, D., and Anghel, M. “Data-driven learning for the Mori-Zwanzig formalism: A generalization of the Koopman learning framework,” presented at the *SIAM Conference on the Application of Dynamical Systems (DS21)*, virtual event, May 23-27, 2021.
21. Nouri, A.G., Babae, H., Givi, P., Chelliah, H.K., and Livescu, D. “Skeletal model reduction with forced optimally time dependent modes,” presented at the *12th U.S. national Combustion Meeting*, virtual event hosted by Texas A&M, May 24-26, 2021.
22. Sharan, N., Brady, P.T. and Livescu, D. “Finite-difference Cartesian cut-cell method for hyperbolic systems”, AIAA paper 2021-0746 presented at the *AIAA Science and Technology Forum and Exhibition 2021*, virtual event, January 11-15, 2021.
23. Kaiser, B., Saenz, J. and Livescu, D. “A performance metric for objective discovery of leading-order dynamics through unsupervised machine learning,” presented at the *AGU Fall meeting*, online, December 1-17, 2020.
24. Aslangil, D., Livescu, D. and Banerjee, A. “Acceleration reversal effects on buoyancy-driven homogeneous variable-density turbulence,” in *Proceedings of the 22nd Australasian Fluid Mechanics Conference (AFMC2020)*, Brisbane, Australia, December 7-10, 2020.
25. Grosset, P., Biwer, C.M., Pulido, J., Mohan, A.T., Biswas, A., Patchett, J., Turton, T.L., Rogers, D.H., Livescu, D. and Ahrens, J. “Foresight: Analysis that matters,” in *Proceedings of the International Conference for High Performance Computing, Networking, and Storage Analysis (SC20)*, pp. 1171-1185, November 16-19, 2020.

<https://doi.ieeecomputersociety.org/10.1109/SC41405.2020.00087>

26. Mohan, A.T., Lubbers, N., Livescu, D. and Chertkov, M. “Embedding hard physical constraints in convolutional neural networks for 3D turbulence,” presented at the at the [*AI for Earth Sciences workshop of the Eighth International Conference on Learning Representations \(ICLR20\)*](#), Virtual Conference, formerly Addis Ababa, Ethiopia, April 26, May 1, 2020.
27. Mohan, A.T., Lubbers, N., Livescu, D. and Chertkov, M. “Wavelet-powered neural networks for turbulence,” presented at the at the [*AI for Earth Sciences workshop of the Eighth International Conference on Learning Representations \(ICLR20\)*](#), Virtual Conference, formerly Addis Ababa, Ethiopia, April 26, May 1, 2020.
28. Sharan, N., Brady, P.T. and Livescu, D. “Stable and conservative boundary treatment for difference methods, with applications to cut-cell discretizations,” AIAA paper 2020-0807 presented at the *AIAA Science and Technology Forum and Exhibition 2020*, Orlando, FL, January 6-10, 2020.
29. Tian, Y., Jaber, F.A. and Livescu, D. “Modeling of shock propagation in non-uniform density media,” AIAA paper 2020-0101 presented at the *AIAA Science and Technology Forum and Exhibition 2020*, Orlando, FL, January 6-10, 2020.
30. Mohan, A.T., Livescu, D. and Chertkov, M. “Wavelet-powered neural networks for turbulence,” in proceedings of the 33rd Conference on Neural Information Processing Systems (NeurIPS), Vancouver, Canada, December 8-14, 2019.
31. Aslangil, D., Livescu, D. and Banerjee, A. “Dynamics of turbulence with large density variations,” presented at the *IMECE International Mechanical Engineering Congress and Exhibition*, Salt Lake City, UT, November 11-14, 2019. **Best Theoretical Approach Poster Award.**
32. Harnish, C., D’Alessandro, L., Matous, K. and Livescu, D. “Error control in multi-physics computations with multiresolution wavelets,” presented at the *IMECE International Mechanical Engineering Congress and Exhibition*, Salt Lake City, UT, November 11-14, 2019.
33. Mohan, A., Daniel, D., Livescu, D. and Chertkov, M. “Wavelet-convolutional LSTM: An efficient deep learning paradigm for high fidelity turbulence,” presented at the *17th European Turbulence Conference*, Torino, Italy, September 3-6, 2019.
34. Saenz, J.A., Aslangil, D. and Livescu, D. “Filter-width dependence of the dynamics of homogeneous variable density turbulence,” presented at the *17th European Turbulence Conference*, Torino, Italy, September 3-6, 2019.
35. Baltzer, J. and Livescu, D. “Direct Numerical Simulations of combined Rayleigh-Taylor/shear flow to late times,” presented at the *17th European Turbulence Conference*, Torino, Italy, September 3-6, 2019.
36. Harnish, C., D’Alessandro, L., Matous, K. and Livescu, D. “Multi-physics modeling with multiresolution wavelets,” presented at the *15th US National Congress on Computational Mechanics*, Austin, TX, July 28 - August 1, 2019.
37. Saenz, J.A., Aslangil, D. and Livescu, D. “Dynamics of filtered statistics of homogeneous variable density turbulence,” presented at the *ASME-JSME-KSME Joint Fluids Engineering Conference 2019*, San Francisco, CA, July 28 – August 1, 2019.

38. Brady, P. and Livescu, D. "Stable, high-order, and conservative cut-cell methods," AIAA paper 2019-1991 presented at the *AIAA Science and Technology Forum and Exhibition 2019*, San Diego, CA, January 7-11, 2019.
39. Harnish, C., Matous, K. and Livescu, D. "Multiresolution modeling and error control with an adaptive wavelet algorithm," presented at the *IMECE International Mechanical Engineering Congress and Exhibition*, Pittsburgh, PA, November 11-14, 2018.
40. Aslangil, D., Livescu, D. and Banerjee, A. "High-Atwood number effects on variable-density turbulence," presented at the *iTi 2018 (interdisciplinary Turbulence initiative) Conference on Turbulence*, University Centre of Bertinoro, September 5-7, 2018.
41. Daniel, D. and Livescu, D. "Non-Gaussian scalar statistics using a novel reaction analogy forcing method" presented at the *iTi 2018 (interdisciplinary Turbulence initiative) Conference on Turbulence*, University Centre of Bertinoro, September 5-7, 2018.
42. Harnish, C., Matous, K. and Livescu, D. "An adaptive wavelet algorithm for multi-resolution modeling with error control," presented at the *XXX IUPAP Conference on Computational Physics*, University of California, Davis, CA, July 29 – August 2, 2018.
43. Harnish, C., Matous, K. and Livescu, D. "Adaptive wavelet algorithm for multiresolution computational modeling with error control," presented at the 13th World Congress on Computational Mechanics, New York City, NY, July 22-27, 2018.
44. Nadiga, B. and Livescu, D. "Joint analysis of RANS models and DNS/experimental. data towards improving RANS models," presented at the *16th International Workshop on the Physics of Compressible Turbulent Mixing*, Marseille, France, July 15-20, 2018.
45. Aslangil, D., Livescu, D. and Banerjee, A. "Variable-density effects on turbulent mixing," presented at the *16th International Workshop on the Physics of Compressible Turbulent Mixing*, Marseille, France, July 15-20, 2018.
46. * Livescu, D. "Turbulence with large density variations," invited sectional presentation at the *18th US National Congress for Theoretical and Applied Mechanics*, Chicago, IL, June 5-9, 2018.
47. Harnish, C., Matous, K. and Livescu, D. "Adaptive wavelet algorithm for multiresolution computational modeling with error control," presented at the *18th US National Congress for Theoretical and Applied Mechanics*, Chicago, IL, June 5-9, 2018.
48. Tian, Y., Jaber, F.A. and Livescu, D. "Density effects on the flow structure in multi-fluid shock-turbulence interaction," AIAA paper 2018-0374 presented at the *AIAA Science and Technology Forum and Exhibition 2018*, Kissimmee, FL, January 9-14, 2018.
49. Daniel, D. and Livescu, D. "The influence of large variations in transport properties on homogeneous turbulence characteristics," paper number 28819, presented at the *16th European Turbulence Conference*, Stockholm, Sweden, August 21-24, 2017.
50. Baltzer, J. and Livescu, D. "Turbulent mixing characteristics in Direct Numerical Simulations of incompressible variable-density shear-driven mixing layers," paper number 29895, presented at the *16th European Turbulence Conference*, Stockholm, Sweden, August 21-24, 2017.

51. Aslangil, D., Livescu, D. and Banerjee, A. "High-Atwood number effects on buoyancy-driven variable density homogeneous turbulence," paper number 28299, presented at the *16th European Turbulence Conference*, Stockholm, Sweden, August 21-24, 2017.
52. Livescu, D. "The structure of the turbulent Rayleigh-Taylor mixing layer," paper number 28319, presented at the *16th European Turbulence Conference*, Stockholm, Sweden, August 21-24, 2017.
53. Harnish, C., Matous, K. and Livescu, D. "Adaptive wavelet algorithm for solving coupled systems of partial differential equations with error control," presented at the *14th US National Congress on Computational Mechanics*, Montreal, Canada, July 17-20, 2017.
54. Tian, Y., Jaber, F.A. and Livescu, D. "Shock propagation through media with non-uniform density," presented at the *31st International Symposium on Shock Waves*, Nagoya, Japan, July 9-14, 2017.
55. Tian, Y., Jaber, F.A., Livescu, D. and Li, Z. "Numerical study of shock-turbulence interactions in variable-density flows," presented at the *10th International Symposium on Turbulence Shear Flow Phenomena*, Chicago, IL, July 6-9, 2017.
56. Wieland, S., Reckinger, S., Hamlington, P. and Livescu, D. "Effects of background stratification on the compressible Rayleigh-Taylor instability," AIAA paper 2017-3974 presented at the *47th Fluid Dynamics Conference, AIAA Aviation Forum and Exhibition*, Denver, CO, June 5-9, 2017, <https://doi.org/10.2514/6>.
57. Livescu, D. and Li, Z. "Subgrid-scale analysis of turbulence after the shock turbulence interaction," presented at the *24th International Congress of Theoretical and Applied Mechanics*, Montreal, Canada, August 21-26, 2016.
58. Srinath, A., Livescu, D. and Miller, R. "A novel strategy for compact finite difference evaluation on GPU-accelerated clusters," presented at the *24th International Congress of Theoretical and Applied Mechanics*, Montreal, Canada, August 21-26, 2016.
59. Nadiga, B.T. and Livescu, D. "Bayesian analysis of RANS models," presented at the *15th International Workshop on the Physics of Compressible Turbulent Mixing*, Sidney, Australia, July 11 – 15, 2016.
60. Livescu, D. and Li, Z., "Statistics of the subgrid-scales after the shock turbulence interaction," presented at the *15th European Turbulence Conference*, Delft, The Netherlands, August 25-28, 2015.
61. Baltzer, J.R. and Livescu, D. "Direct Numerical Simulations of turbulent mixing layers between two fluids of large density difference," presented at the *15th European Turbulence Conference*, Delft, The Netherlands, August 25-28, 2015.
62. Aslangil, D., Livescu, D. and Banerjee, A., "Variable-density mixing under variable pressure gradient," presented at the *15th European Turbulence Conference*, Delft, The Netherlands, August 25-28, 2015.
63. Li, Z. and Livescu, D. "A generalized diffuse interface method for accurate simulations of multi-component flows with immiscible materials," presented at the *1st Pan-American Congress on Computational Mechanics*, Buenos Aires, Argentina, April 27-29, 2015.

64. Livescu, D. and Ryu, J. "DNS and LIA analysis of the shock-turbulence interaction," presented at the *14th International Workshop on the Physics of Compressible Turbulent Mixing*," San Francisco, CA, August 31 – Sept. 5, 2014.
65. Li, Z. and Livescu, D. "Cahn-Hilliard Navier-Stokes equations for the numerical simulations of immiscible Rayleigh-Taylor instability," presented at the *14th International Workshop on the Physics of Compressible Turbulent Mixing*," San Francisco, CA, August 31 – Sept. 5, 2014.
66. Ryu, J. and Livescu, D. "Turbulent vortex dynamics across a normal shock wave," in *Proceedings of the 21st International Shock Interaction Symposium*, ISBN 978-9934-517-57-0, 85-91, Riga, Latvia, August 3-8, 2014.
67. * Livescu, D. "The structure of the Rayleigh-Taylor mixing layer," presented at the *17th US National Congress on Theoretical and Applied Mechanics*," Michigan State University, East Lansing, MI, June 15-20, 2014.
68. Wei, T. and Livescu, D. "New findings on the growth of single-mode Rayleigh-Taylor instability," presented at the *17th US National Congress on Theoretical and Applied Mechanics*," Michigan State University, East Lansing, MI, June 15-20, 2014.
69. Li, Z. and Livescu, D. "Cahn-Hilliard Navier-Stokes equations for the numerical simulations of immiscible Rayleigh-Taylor instability," presented at the *17th US National Congress on Theoretical and Applied Mechanics*," Michigan State University, East Lansing, MI, June 15-20, 2014.
70. Livescu, D. and Wei, T. "Direct Numerical Simulations of tilted Rayleigh-Taylor instability," presented at the *14th European Turbulence Conference*, Lyon, France, September 1-4, 2013.
71. Ryu, J. and Livescu, D. "Direct Numerical Simulations of isotropic turbulence interacting with a shock wave," presented at the *29th International Symposium on shock waves*, Madison, WI, July 14-19, 2013.
72. Livescu, D. and Wei, T. "Direct Numerical Simulations of Rayleigh-Taylor instability with gravity inversion," in *Proceedings of the 7th International Conference on Computational Fluid Dynamics (ICCFD7)*, paper number 2304, Big Island, HI, July 9-13, 2012.
73. Reckinger, S.J., Livescu, D. and Vasilyev, O.V. "Simulations of the compressible Rayleigh-Taylor instability using the adaptive wavelet-collocation method," in *Proceedings of the 7th International Conference on Computational Fluid Dynamics (ICCFD7)*, paper number 3801, Big Island, HI, July 9-13, 2012.
74. Livescu, D. and Wei, T. "Turbulence characteristics in the variable-density Rayleigh-Taylor mixing layer," presented at the *13th International Symposium on the Physics of Compressible Turbulent Mixing (IWPCTM13)*, Woburn, England, July 16-20, 2012.
75. Ryu, J. and Livescu, D. "Direct Numerical Simulations of isotropic and post-shock turbulence interacting with a shock wave," presented at the *13th International Symposium on the Physics of Compressible Turbulent Mixing (IWPCTM13)*, Woburn, England, July 16-20, 2012.
76. Andrews, M.J., Livescu, D., Wei, T. and Youngs, D.L. "A test problem for two-dimensional turbulent mixing (RANS) model validation," presented at the *13th International Symposium on the Physics of Compressible Turbulent Mixing (IWPCTM13)*, Woburn, England, July 16-20, 2012.

77. Livescu, D., Wei, T. and Petersen, M.R. "Direct Numerical Simulations of Rayleigh-Taylor instability", presented at the *13th European Turbulence Conference*, Warsaw, Poland, September 12-15, 2011.
78. * Livescu, D., Petersen, M.R. and Wei, T. "Turbulence and Mixing Characteristics in the Variable Density Rayleigh-Taylor Mixing Layer," invited presentation at the *3rd International Conference Turbulent Mixing and Beyond*, Trieste, Italy, 21 - 28 August 2011.
79. Wei, T. and Livescu, D. "Turbulence and Mixing Characteristics in the Variable Density Rayleigh-Taylor Mixing Layer," presented at the *3rd International Conference Turbulent Mixing and Beyond*, Trieste, Italy, 21 - 28 August 2011.
80. Livescu, D., Petersen, M.R. and Wei, T. "Turbulence and mixing characteristics in the variable-density Rayleigh-Taylor mixing layer," in *Proceedings of NECDC 2010 (LA-CP-13-01033)*, 39-46, Los Alamos, NM, October 18-22, 2010.
81. * Livescu, D., Mohd-Yusof, J. and Kelley, T. M. "Direct Numerical Simulations of reacting compressible turbulence with type Ia supernova microphysics," invited presentation at the *SIAM Conference on Parallel Processing for Scientific Computing (PP10)*, Seattle, WA, February 24-26, 2010.
82. Livescu, D. and Ristorcelli, J.R. "Mixing asymmetry in variable-density turbulence," presented at the *12th European Turbulence Conference*, Marburg, Germany, September 7-10, 2009.
83. Rubinstein, R., Bos, W.R.T., Livescu, D. and Woodruff "Closure models for inhomogeneous turbulence," presented at the *12th European Turbulence Conference*, Marburg, Germany, September 7-10, 2009.
84. * Livescu, D., Ristorcelli, J.R. and Gore, R.A "Variable-density Rayleigh-Taylor turbulence," invited presentation at the *2nd International Conference Turbulent Mixing and Beyond*, Trieste, Italy, July 26-August 7, 2009.
85. Reckinger, S. J., Livescu, D. and Vasilyev, O. "Compressibility effects on the single mode Rayleigh-Taylor instability," presented at the *2nd International Conference Turbulent Mixing and Beyond*, Trieste, Italy, July 26-August 7, 2009.
86. * Mohd-Yusof, J., Livescu, D. and Kelley T. M. "Adapting the CFDNS compressible Navier-Stokes solver to the Roadrunner architecture," invited paper at the *21st International Conference on Parallel Computational Fluid Dynamics (ParCFD09)*, Moffett Field, CA, May 18-22, 2009.
87. * Mohd-Yusof, J., Livescu, D., Kelley, T.M., Petersen, M.R., Desai, N. "Fluid Flow Simulations on Roadrunner," invited paper at the *SIAM Conference on Computational Science and Engineering (CSE09)*, Miami, FL, March 2-6, 2009.
88. * Ristorcelli, J.R., Livescu, D., Taylor, M., Hjelm, N., Clark, T., McCormick, P, and Martin, S. "A fluid dynamics viewpoint on material mixing," invited paper at *NECDC 2008*.
89. Livescu, D., Ristorcelli, J.R., Gore, R.A., Dean, S.H. "High Reynolds number Rayleigh-Taylor turbulence," presented at the *11th International Workshop on the Physics of Compressible Turbulent Mixing*, Santa Fe, NM, July 11-17, 2008.

90. Livescu, D. and Ristorcelli, J.R. "Mixing asymmetry and the mix parameter in variable density turbulence," presented at the *11th International Workshop on the Physics of Compressible Turbulent Mixing*, Santa Fe, NM, July 11-17, 2008.
91. Yu, H. and Livescu, D. "Compressible Rayleigh-Taylor Instability in Cylindrical Geometry," presented at the *11th International Workshop on the Physics of Compressible Turbulent Mixing*, Santa Fe, NM, July 11-17, 2008.
92. Petersen, M.R., Livescu, D., Mohd-Yusof, J. and Dean, S.H. "Direct Numerical Simulations of Shock-Turbulence Interactions," presented at the *11th International Workshop on the Physics of Compressible Turbulent Mixing*, Santa Fe, NM, July 11-17, 2008.
93. Livescu, D. and Ristorcelli, J.R. "Mixing Characteristics in Buoyancy-Driven Turbulence," in *Proceedings of the 11th European Turbulence Conference*, Porto, Portugal, June, 2007.
94. Livescu, D. and Ristorcelli, J.R. "Characteristics of Buoyancy-Driven Variable Density Turbulence," in *Proceedings of the 10th International Workshop on the Physics of Compressible Turbulent Mixing*, Paris, France, July 17-21, 2006.
95. Ristorcelli, J.R. and Livescu, D. "An Eddy Viscosity Expression for Favre Averaged Reynolds Stresses in Variable Density Turbulence," in *Proceedings of the 10th International Workshop on the Physics of Compressible Turbulent Mixing*, Paris, France, July 17-21, 2006.
96. Francois, M.M., Dendy, E.D., Livescu, D., Lowrie, R.B. and Steinkamp, M.J. "Effects of Different Numerical Interface Methods on Hydrodynamics Instability," in *Proceedings of the 10th International Workshop on the Physics of Compressible Turbulent Mixing*, Paris, France, July 17-21, 2006.
97. * Livescu, D. "Surface Dynamics in Homogeneous, Buoyancy-Driven, Variable Density Turbulence," presented at the *International Workshop on Physics and Mathematics of Growing Interfaces*, Santa Fe, NM, January 9-13, 2006.
98. Pedial-Collins, N.T, Vanderheyden, W.B., Zhang, D.Z., Dendy, E.D., and Livescu, D. "Parallel Operation of CartaBlanca on Shared and Distributed Memory Computers," in *Proceedings of the Joint ACM Java Grande - ISCOPE 2002 Conference*, 235, Seattle, Washington, November 3 - 5, 2002.
99. Livescu, D. and Madnia, C.K. "Non-Premixed Flame-Turbulence Interaction in Compressible Turbulence," presented at the *9th European Turbulence Conference*, University of Southampton, UK, July 2 - 5, 2002.
100. Vanderheyden, W.B., Dendy, E.D., Livescu, D. and Pedial-Collins, N.T. "CartaBlanca - An Object-Oriented Jacobian-Free Newton-Krylov Solver Environment for Multiphase Flow with Phase Change," presented at the *7th Copper Mountain Conference on Iterative Methods*, March 24 - 30, 2002.
101. Livescu, D. and Madnia, C.K. "Anisotropy in Reacting Compressible Turbulent Shear Flow," presented at the *Third AFOSR International Conference on Direct Numerical Simulation and Large Eddy Simulation (TAICDL)*, University of Texas at Arlington, August 5 - 9, 2001.

102. Livescu, D. and Madnia, C.K. "Compressibility Effects on the Scalar Mixing in Reacting Homogeneous Turbulence," presented at the *IUTAM Symposium on Turbulent Mixing and Combustion*, Queen's University at Kingston, Canada, June 3 - 6, 2001.
103. Mitran, S., Caraeni, D. and Livescu, D. "Large Eddy Simulation of Unsteady Rotor-Stator Interaction in a Centrifugal Compressor," AIAA Paper 97 - 3006 presented at the *33rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, Seattle, Washington, July 6 - 9, 1997.
104. Livescu, D. "A Finite-Difference Method for Inverse Calculation of the Compressible Turbulent Boundary Layer," in *Proceedings of the International Conference Turbo '96*, 120 - 127, Bucharest, Romania, July 15 - 18, 1996.

V. Non-peer reviewed conferences (invited talks are shown with *)

1. Brady, P., Harnish, C. and Livescu, D. "High-order embedded boundary methods for Direct Numerical Simulations," Bulletin of American Physical Society, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
2. Standridge, J., Cizmas, P. and Livescu, D. "Conditions for satisfying the second law of thermodynamics for detailed and reduced chemical mechanism," Bulletin of American Physical Society, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
3. Baltzer, J. and Livescu, D. "Convergence of high-order and low-order accuracy simulations for Richtmyer-Meshkov instability," Bulletin of American Physical Society, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
4. Barnett, J., Tian, Y., Lin, Y.T. and Livescu, D. "Data-driven observable discovery for reduced-order modeling of turbulence based on the Mori-Zwanzig formalism," Bulletin of American Physical Society, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
5. Gautam, A., Livescu, D. and Mejia-Alvarez, R. "Coherent motions and mixing dynamics of single-stream shear layers: Insights from 4D-PTV measurements," Bulletin of American Physical Society, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
6. Shahadat, M.R.B., Li, Z., Jaber, F.A. and Livescu, D. "Numerical study of variable density effects on a spatially developing supersonic turbulent shear layer," Bulletin of American Physical Society, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
7. Liu, Y., Babae, H., Givi, P., Chelliah, H., Livescu, D. and Nouri, A. G. "Skeletal reaction models for gasoline surrogate combustion," Bulletin of American Physical Society, presented at the *76th*

Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Washington, DC, November 19-21, 2023.

8. Chiodi, R., Brady, P., Jibben, S., Koshkarov, O., Wollaeger, R., Tokareva, S., Fryer, C., Delzanno, G. and Livescu, D. "MASS-APP: A high performance collisionless plasma simulation tool," *Bulletin of American Physical Society*, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
9. Hyett, C.M., Tian, Y., Stepanov, M., Livescu, D. and Chertkov, M. "Velocity gradient prediction using parameterized Lagrangian deformation models," *Bulletin of American Physical Society*, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
10. Harnish, C., Livescu, D., Chiodi, R., Brady, P., Koshkarov, O. and Delzanno, G. "A spectral method for coupled fluid-kinetic flow simulations," *Bulletin of American Physical Society*, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
11. Livescu, D. and Li, Z. "Magnetic Rayleigh-Taylor instability during ICF coasting stage," *Bulletin of American Physical Society*, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
12. Tian, Y., Woodward, M., Stepanov, M., Fryer, C., Livescu, D. and Chertkov, M. "Lagrangian Large Eddy Simulations via Physics-Informed Machine Learning," *Bulletin of American Physical Society*, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
13. Woodward, M., Tian, Y., Lin, Y.T., Hader, C., Fasel, H. and Livescu, D. "Modal Analysis with Mori-Zwanzig Formalism: Application to Hypersonic Boundary," *Bulletin of American Physical Society*, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
14. Majumder, S., Livescu, D. and Girimaji, S. "Rayleigh-Taylor instability: bubble-spike asymmetry in the transitional regime," *Bulletin of American Physical Society*, presented at the *76th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Washington, DC, November 19-21, 2023.
15. Woodward, M., Chiodi, R.M., Livescu, D., McKerns, M., Morris, H.E., Ramey, N., Coleman, J.E., and Koglin, J.E. "Physics informed reduced electron evolution models from rapid target heating based on measurements," *Bulletin of American Physical Society*, presented at the *65th Annual Meeting of the American Physical Society, Division of Plasma Physics*, Denver CO, October 30-November 03, 2023.
16. Chapurin, O., Koshkarov, O., Delzanno, G., Roytershteyn, V.S., Chiodi, R.M., Brady, P.T., Jibben, Z., Harnish, C., Wollaeger, R., Tokareva, S. and Livescu, D. "Hybrid particle-spectral method for kinetic plasma simulations," *Bulletin of American Physical Society*, presented at the *65th Annual Meeting of the American Physical Society, Division of Plasma Physics*, Denver CO, October 30-November 03, 2023.
17. Koshkarov, O., Chapurin, O., Delzanno, G., Roytershteyn, V.S., Chiodi, R.M., Brady, P.T., Jibben, Z., Harnish, C., Wollaeger, R., Tokareva, S. and Livescu, D. "Combination of Hermite-Legendre

- bases for kinetic plasma equations,” *Bulletin of American Physical Society*, presented at the 65th *Annual Meeting of the American Physical Society, Division of Plasma Physics*, Denver CO, October 30–November 03, 2023.
18. Koglin, J.E., Chiodi, R.M., Coleman, J.E., Livescu, D., McKerns, M., Morris, H.E., Ramey, N.B. and Woodward, M.J. “Spatially resolved electron evolution from rapid target heating based on shadowgraph, interferometer, and spectroscopy measurements,” presented at the 50th *IEEE International Conference on Plasma Science (ICOPS50)*, Santa Fe, NM, May 21–25, 2023.
 19. Corbetta, A., Gabbana, A., Gyrya, V., Livescu, D., Prins, J. and Toschi, F. “Towards learning Lattice Boltzmann collision operators,” presented at the *APS March meeting*, Las Vegas, NV, March 5–10, 2023.
 20. Wong, M.L., Baltzer, J.R., Livescu, D. and Lele, S.K. “Study of turbulence statistics and transport for Richtmyer-Meshkov instability with re-shock,” presented at the *APS March meeting*, Las Vegas, NV, March 5–10, 2023.
 21. Chiodi, R., Brady, P., Jibben, S., Koshkarov, O., Wollaeger, R., Tokareva, S., Fryer, C., Delzanno, G. and Livescu, D. “Exploration of the FleCSI asynchronous runtime for large scale plasma simulations on heterogeneous architectures” presented at the *APS March meeting*, Las Vegas, NV, March 5–10, 2023.
 22. * Nouri, A.G., Babaei, H., Givi, P. and Livescu, D. “On-the-fly reduced-order modeling of turbulent flames in Type Ia supernovae,” *Bulletin of American Physical Society*, *invited talk* at Mini-symposium: Astrophysical turbulence: current understanding and modeling challenges, 75th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Indianapolis, IN, November 20–22, 2022.
 23. Cherg, K, Lele, S.K. and Livescu, D. “Compressible Rayleigh-Taylor Instability with Local Heat Transfer and Large Transport Property Contrasts,” *Bulletin of American Physical Society*, presented at the 75th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Indianapolis, IN, November 20–22, 2022.
 24. Majumder, S., Livescu, D. and Girimaji, S. “Kinetic effects on Rayleigh-Taylor instability,” *Bulletin of American Physical Society*, presented at the 75th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Indianapolis, IN, November 20–22, 2022.
 25. Woodward, M., Tian, Y., Mohan, A., Lin, Y.T., Chertkov, M. and Livescu, D. “Data-driven Mori-Zwanzig operators for boundary layer transition,” *Bulletin of American Physical Society*, presented at the 75th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Indianapolis, IN, November 20–22, 2022.
 26. Chertkov, M., Tian, Y., Stepanov, M., Fryer, C.L., Woodward, M., Hyett, C.M. and Livescu, D. “Lagrangian Large Eddy Simulation via physics-informed machine learning,” *Bulletin of American Physical Society*, presented at the 75th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Indianapolis, IN, November 20–22, 2022.
 27. Woodward, M., Tian, Y., Hyett, C.M., Fryer, C.L., Livescu, D., Stepanov, M. and Chertkov, M. “Physics-informed machine learning of Smooth Particle Hydrodynamics: Compressibility and shocks,” *Bulletin of American Physical Society*, presented at the 75th *Annual Meeting of the*

American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.

28. Tia, Y.T., Lin, Y.T. and Livescu, D. “Regression-based projection for learning Mori-Zwanzig operators for isotropic turbulence,” *Bulletin of American Physical Society*, presented at the *75th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.*
29. Liu, Y., Babae, H., Givi, P., Chelliah, H., Livescu, D. and Nouri, A. G. “Skeletal reaction models for atmospheric and high pressure combustion of methane,” *Bulletin of American Physical Society*, presented at the *75th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.*
30. Chiodi, R.M., Nguyen-Fotiadis, N.T., McKerns, M., Sornborger, A.T. and Livescu, D. “Machine learning flux-limiters for compressible flow simulations,” *Bulletin of American Physical Society*, presented at the *75th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.*
31. Hyett, C.M., Tian, Y., Woodward, M., Chertkov, M., Livescu, D. and Stepanov, M. “Applicability of machine learning methodologies to model the statistical evolution of the coarse-grained velocity gradient tensor,” *Bulletin of American Physical Society*, presented at the *75th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.*
32. Wei, T., Livescu, D., Liu, X. “Scaling patch analysis of planar turbulent wakes,” *Bulletin of American Physical Society*, presented at the *75th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.*
33. Baltzer, J.R. and Livescu, D. “Length scales governing turbulence transport and mass diffusion in variable-density turbulent shear-driven mixing layers,” *Bulletin of American Physical Society*, presented at the *75th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.*
34. Shahadat, M.R.B., Li, Z., Jaber, F.A. and Livescu, D. “Numerical study of spatially developing supersonic mixing layers,” *Bulletin of American Physical Society*, presented at the *75th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Indianapolis, IN, November 20-22, 2022.*
35. Tian, Y., Woodward, M., Stepanov, M., Fryer, C., Hyett, C., Chertkov, M. and Livescu, D. “Physics-informed machine learning for reduced order modeling of Lagrangian turbulence,” presented at the *APS March meeting, Chicago, IL, March 14-18, 2022.*
36. * Livescu, D. “Turbulence with large density variations due temperature and compositional fluctuations,” *Bulletin of American Physical Society*, invited talk at the *74th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Phoenix, AZ, November 21-23, 2021.*
37. Tian, Y., Lin, Y.T., Anghel, M. and Livescu, D. “Data-driven learning of Mori-Zwanzig operators for isotropic turbulence,” *Bulletin of American Physical Society*, presented at the *74th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Phoenix, AZ, November 21-23, 2021.*
38. Nouri, A., Liu, Y., Livescu, D., Givi, P., Chelliah, H. and Babae, H. “Chemical kinetics skeletal reduction with forced optimally time dependent modes,” *Bulletin of American Physical Society*,

presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.

39. Cherng, K., Lele, S.K. and Livescu, D. “Compressible Rayleigh-Taylor instability with temperature variations,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
40. Chakarbarti, S., Mohan, A., Livescu, D. and Gatoinde, D. “Galerkin reduced order models for compressible flows with differentiable programming,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
41. Woodward, M., Chertkov, Tian, Y., M., Stepanov, M., Livescu, D., Hyett, C. and Fryer, C. “Physics informed Machine Learning of Smooth Particle Hydrodynamics: Solving inverse problems using a mixed mode approach,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
42. Hyett, C., Chertkov, M., Tian, Y., Livescu, D. and Stepanov, M. “Machine learning statistical evolution of the coarse-grained velocity gradient tensor,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
43. Hyett, C., Tian, Y., Chertkov, M., Livescu, D. and Stepanov, M. “Data analysis of the coarse-grained velocity gradient tensor,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
44. Aslangil, D., Livescu, D. and Banerjee, A. “Buoyancy-driven homogeneous turbulence under sharp acceleration changes,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
45. Sharan, N., Natarajan, M., Brady, P. and Livescu, D. “Construction of stable difference schemes using a generative model,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
46. Tian, Y., Chertkov, M., Woodward, M., Stepanov, M., Fryer, C., Hyett, C and Livescu, D. “Machine learning Lagrangian velocity gradient tensor with smooth particle hydrodynamics,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
47. Majumder, S., Sharma, B., Livescu, D. and Girimaji, S. “Compressibility effects on the Rayleigh-Taylor instability,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
48. Woodward, M., Chertkov, Tian, Y., M., Stepanov, M., Livescu, D., Hyett, C. and Fryer, C. “Physics informed Machine Learning of Smooth Particle Hydrodynamics: Validation of the Lagrangian turbulence approach,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
49. Kaiser, B., Saenz, J., Sonnewald, M. and Livescu, D. “Objective discovery of fluid dynamical

- regimes with unsupervised machine learning,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
50. Li, Z. and Livescu, D. “Numerical investigations of plasma Rayleigh-Taylor instability in ICF coasting stage,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
 51. Towery, C., Saenz, J. and Livescu, D. “A comparison of hybrid RANS/LES models across the complete transition from URANS to DNS,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
 52. Baltzer, J.R., Wong, M.L., Livescu, D. and Lele, S.K. “High-resolution simulation and analysis of Richtmyer-Meshkov instability,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
 53. Brady, P., Livescu, D. and Sharan, N. “High-order cut-cell method for Direct Numerical Simulations,” *Bulletin of American Physical Society*, presented at the 74th *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Phoenix, AZ, November 21-23, 2021.
 54. Saenz, J., Aslangil, D. and Livescu, D. “Filtering, averaging and scale dependency in homogeneous variable-density turbulence,” *Bulletin of American Physical Society*, presented at the 73rd *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
 55. Haack, J., Diaw, A., Pavel, R., Sagert, I., Keenan, B., Livescu, D., Lubbers, N., McKerns, M., Junghans, C. and German, T. “Enacting predictive scale-bridging simulations through active learning,” *Bulletin of American Physical Society*, presented at the 63rd *Annual Meeting of the American Physical Society, Division of Plasma Physics*, remote, November 8-12, 2021.
 56. Keenan, B., Chrismond, S., Livescu, D., Haack, J. and Pavel, R. “Collisional plasma shocks in a warm dense matter regime,” *Bulletin of American Physical Society*, presented at the 63rd *Annual Meeting of the American Physical Society, Division of Plasma Physics*, remote, November 8-12, 2021.
 57. Nouri, A., Givi, P., Babae, H. and Livescu, D. “Skeletal reaction model generation with optimally time dependent modes,” *Bulletin of American Physical Society*, presented at the 73rd *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
 58. Cherg, K., Lele, S.K. and Livescu, D. “Variable transport property effects on the compressible Rayleigh-Taylor instability,” *Bulletin of American Physical Society*, presented at the 73rd *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
 59. Mohan, A., Nagarajan, K. and Livescu, D. “Learning physics-based Galerkin models of turbulence with neural differential equations,” *Bulletin of American Physical Society*, presented at the 73rd *Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.

60. Tian, Y., Livescu, D. and Chertkov, M. “Physics-informed machine learning of the Lagrangian dynamics of the velocity gradient tensor,” *Bulletin of American Physical Society*, presented at the *73rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
61. Woodward, M., Tian, Y., Chertkov, M., Stepanov, M., Livescu, D. and Fryer, C. “Machine learning of reduced Lagrangian models of turbulence,” *Bulletin of American Physical Society*, presented at the *73rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
62. Hyett, C., Chertkov, M., Tian, Y. and Livescu, D. “Machine learning statistical Lagrangian geometry of turbulence,” *Bulletin of American Physical Society*, presented at the *73rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
63. Tretiak, D., Mohan, A. and Livescu, D. “Embedding physics as hard constraints in Generative Adversarial Networks for 3D turbulence,” *Bulletin of American Physical Society*, presented at the *73rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
64. Saenz, J., Aslangil, D. and Livescu, D. “Length-scale dependence of the dynamics of homogeneous variable-density turbulence,” *Bulletin of American Physical Society*, presented at the *73rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
65. Aslangil, D., Livescu, D. and Banerjee, A. “Buoyancy-driven homogeneous turbulence with large density fluctuations,” *Bulletin of American Physical Society*, presented at the *73rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
66. Sharan, N., Brady, P. and Livescu, D. “Dimensionally-split provably stable cut-cell approach for flow calculations,” *Bulletin of American Physical Society*, presented at the *73rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Chicago, IL, November 22-24, 2020.
67. Haack, J., Diaw, A., Barros, K., Junghans, C., Keenan, B., Li, Y.W., Livescu, D., Lubbers, N., McKerns, M., Pavel, R.S., Rosenberger, D., Sagert, I., and German, T. “Multiscale simulation of plasma flows using active learning,” *Bulletin of American Physical Society*, presented at the *62nd Annual Meeting of the American Physical Society, Division of Plasma Physics*, remote, November 9-13, 2020.
68. Portwood, G., Livescu, D., Nadiga, B. and Saenz, J.A. “Deep neural networks applied to scalar subgrid flux modeling in a mixed DNS/LES framework,” presented at the *NSF Workshop on Exuberance of Machine Learning in Transport Phenomena*, Dallas, TX, February 10-11, 2020.
69. Mohan, A., Lubbers, N., Livescu, D. and Chertkov, M. “Physics embedded neural networks for spatio-temporal turbulence,” presented at the *NSF Workshop on Exuberance of Machine Learning in Transport Phenomena*, Dallas, TX, February 10-11, 2020.
70. Portwood, G., Chertkov, M., Nadiga, B. and Livescu, D. “Physics-informed deep neural networks applied to scalar subgrid flux modeling in a mixed DNS/LES framework,” *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.

71. Shrestha, P., Brady, P., Gyrya, V. and Livescu, D. "High-order ghost-point method for non-conforming boundaries," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
72. Mohan, A., Livescu, D. and Chertkov, M. "Physics-constrained convolutional LSTM neural networks for generative modeling of turbulence," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
73. Tian, Y., Livescu, D. and Chertkov, M. "Physics informed learning of Lagrangian turbulence: Velocity gradient tensor over inertial-range geometry," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
74. Sharan, N., Brady, P. and Livescu, D. "High-order energy-stable boundary treatment for finite-difference cut-cell method," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
75. Maulik, R., Mohan, A., Madireddy, S., Balaprakash, P. and Livescu, D. "Machine learning of sequential data for non-intrusive reduced-order models," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
76. Aslangil, D., Saenz, J. and Livescu, D. "Filter-width and Atwood number effects in filtered homogeneous variable density turbulence," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
77. Li, Z. and Livescu, D. "Direct Numerical Simulations of magnetic Rayleigh-Taylor instability in ICF coasting stage," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
78. Aslangil, D., Livescu, D. and Banerjee, A. "Homogeneous variable-density turbulence with asymmetric initial density distributions," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
79. Portwood, G., Saenz, J. and Livescu, D. "Autonomous RANS/LES hybrid models with data-driven subclosures," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
80. Brady, P. and Livescu, D. "High order cut-cell methods in multiple dimensions," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.
81. Baltzer, J. and Livescu, D. "Direct Numerical Simulations of combined Rayleigh-Taylor/Shear Flow to late times," *Bulletin of American Physical Society* **64**, presented at the *72nd Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Seattle, WA, November 23-26, 2019.

82. Abdourahmane, D., McKerns, M., Haack, J.R., Junghans, C., Brett, K., Lubbers, N.E., Pavel, R.S., Sagert, I., and Livescu, D. "Multiscale simulation method for plasma flows: Coupling molecular dynamics and hydrodynamics," presented at the *2019 International Conference on Numerical Simulation of Plasmas*, Santa Fe, NM, September 3-5, 2019.
83. Sagert, I., Haack, J.R., Abdourahmane, D., Junghans, C., Brett, K., Lubbers, N.E., McKerns, M., Pavel, R.S., and Livescu, D. "A 3D multispecies kinetic-fluid coupling technique for HEDP simulations," presented at the *2019 International Conference on Numerical Simulation of Plasmas*, Santa Fe, NM, September 3-5, 2019.
84. Portwood, G.D., Saenz, J.A., Livescu, D. "Modeling backscatter via artificial neural network in self-adapting RANS/LES hybrid models," presented at the *Physics Informed Machine Learning Workshop*, University of Washington, Seattle, WA, June 6-7, 2019.
85. Brady, P. and Livescu, D. "A foundation for high-order cut-cell methods: Stable derivatives on degenerate meshes," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the *71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
86. Tian, Y., Jaber, F.A. and Livescu, D. "Post-shock turbulence structure and dynamics in the multi-fluid shock-turbulence interaction," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the *71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
87. Bian, X., Livescu, D. and Aluie, H. "Compressible single-fluid single-mode Rayleigh-Taylor instability," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the *71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
88. Pal, N., Kurien, S., Clark, T.T., Aslangil, D. and Livescu, D. "Two-point spectral model for variable-density homogeneous turbulence," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the *71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
89. Nadiga, B., Jiang, C. and Livescu, D. "Towards leveraging machine learning and other statistical methods to improve turbulence modeling," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the *71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
90. Mohan, A.T., Chertkov, M. and Livescu, D. "Spatio-temporal modeling of high-fidelity turbulence with convolutional long short-term memory neural networks," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the *71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
91. Bassenne, M., Esmaily, M., Johnson, P.L., Livescu, D., Moin, P. and Urzay, J. "A dynamic spectrally-enriched subgrid-model for preferential concentration of inertial particles in turbulence," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the *71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
92. Wong, M.L., Livescu, D. and Lele, S.K. "Analysis of second-moment budgets and closure models for Richtmyer-Meshkov instability," *Bulletin of American Physical Society* **63**(14), 350-351,

presented at the 71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Atlanta, GA, November 18-20, 2018.

93. Baltzer, J. and Livescu, D. "Density effects on turbulent kinetic energy and stress budgets in shear-driven mixing layers," *Bulletin of American Physical Society* **63**(14), 350-351, presented at the 71st Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Atlanta, GA, November 18-20, 2018.
94. Li, Z. and Livescu, D. "High-order solver for Direct Numerical Simulations of plasma flows with realistic transport phenomena," presented at the 60th Annual Meeting of the American Physical Society, Division of Plasma Physics, Portland, OR, November 5-9, October 21-25, 2018.
95. Brady, P. and Livescu, D. "High-order, stable and conservative boundary schemes for finite differences," presented at the *SIAM Conference on Analysis of Partial Differential Equations (PD17)*, Baltimore, December 9-12, 2017.
96. Wieland, S.A., Reckinger, S.J., Hamlington, P. and Livescu, D. "Multimodal perturbation evolution in the compressible Rayleigh-Taylor instability," *Bulletin of American Physical Society* **62**(14), 335-336, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
97. Aslangil, D., Livescu, D. and Banerjee, A. "Density-ratio effects on buoyancy-driven variable-density turbulent mixing," *Bulletin of American Physical Society* **62**(14), 531, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
98. Tian, Y., Jaber, F.A., Livescu, D. and Li, Z. "Density effects on post-shock turbulence structure," *Bulletin of American Physical Society* **62**(14), 350-351, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
99. Livescu, D., Tian, Y. and Jaber, F.A. "Shock propagation in media with non-uniform density," *Bulletin of American Physical Society* **62**(14), 351, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
100. Baltzer, J. and Livescu, D. "Density effects on incompressible shear-driven mixing layer growth," *Bulletin of American Physical Society* **62**(14), 349-350, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
101. Brady, P. and Livescu, D. "High-order, stable, and conservative boundary schemes for central and compact finite differences," *Bulletin of American Physical Society* **62**(14), 97, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
102. Li, Z. and Livescu, D. "High-order two-fluid plasma solver for Direct Numerical Simulations of magnetic flows with realistic transport phenomena," *Bulletin of American Physical Society* **62**(14), 179, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
103. Daniel, D. and Livescu, D. "Nonlinear scalar forcing based on a reaction analogy," *Bulletin of American Physical Society* **62**(14), 179, presented at the 70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.

104. Daniel, D. and Livescu, D. "Nonlinear scalar forcing based on a reaction analogy," *Bulletin of American Physical Society* **62**(14), 347-348, presented at the *70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Denver, CO, November 19-21, 2017.
105. Wong, M.L., Livescu, D. and Lele, S.K. "Numerical study of Richtmyer-Meshkov instability with re-shock," *Bulletin of American Physical Society* **62**(14), 444, presented at the *70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Denver, CO, November 19-21, 2017.
106. Kurien, S., Doss, F. and Livescu, D. "Extracting a mix parameter from 2D radiography of variable density flow," *Bulletin of American Physical Society* **62**(14), 457, presented at the *70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Denver, CO, November 19-21, 2017.
107. Nouri, A., Nik, M., Givi, P., Livescu, D., and Pope, S. "PEVC-FMDF for Large Eddy Simulation of compressible turbulent flows" *Bulletin of American Physical Society* **62**(14), 600, presented at the *70th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Denver, CO, November 19-21, 2017.
108. Harnish, C., Matous, K. and Livescu, D. "Adaptive wavelet multiresolution pseudo-spectral solver for nonlinear partial differential equations," presented at the *54th Annual Technical Meeting of the Society of Engineering Science (SES)*, Northeastern University, Boston, MA, July 25-28, 2017.
109. Aslangil, D., Livescu, D. and Banerjee, A. "Non-Boussinesq effects on buoyancy-driven variable-density turbulence," *Bulletin of American Physical Society* **61**(20), 505, presented at the *69th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Portland, OR, November 20-22, 2016.
110. Wieland, S.A., Livescu, D., Vasilyev, O.V. and Reckinger, S.J. "Vortical effects on the compressible Rayleigh-Taylor instability," *Bulletin of American Physical Society* **61**(20), 569, presented at the *69th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Portland, OR, November 20-22, 2016.
111. Tian, Y., Jaber, F.A., Livescu, D. and Li, Z. "Shock-capturing simulations of multi-fluid shock-turbulence interaction," *Bulletin of American Physical Society* **61**(20), 219, presented at the *69th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Portland, OR, November 20-22, 2016.
112. Livescu, D. and Gerashchenko, S. "Viscous effects on the Rayleigh-Taylor instability with background temperature gradient," *Bulletin of American Physical Society* **61**(20), 496, presented at the *69th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Portland, OR, November 20-22, 2016.
113. Baltzer, J. and Livescu, D. "Statistics of vortical structures in variable-density turbulent mixing layers," *Bulletin of American Physical Society* **61**(20), 563-564, presented at the *69th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, Portland, OR, November 20-22, 2016.
114. Livescu, D. and Li, Z., "Immiscible Rayleigh-Taylor instability simulations using the Generalized Cahn-Hilliard Navier-Stokes Equation," presented at *JOWOG 32M*, LLNL, October 11-15, 2016.

115. Baltzer, J.R. and Livescu, D., "Direct Numerical Simulations and modeling of variable-density mixing layers," presented at *JOWOG 32M*, LLNL, October 11-15, 2016.
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VI. Other publications and selected LANL Reports

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