Stanford

Stefan P. Domino

Adjunct Professor, Institute for Computational and Mathematical Engineering (ICME)

Bio

BIO

Dr. Domino’s research interest rests within low-Mach fluid mechanics methods development for complex systems that drive the coupling of mass, momentum, species and energy transport. His core research resides within the intersection of physics elucidation, numerical methods research, V&V techniques exploration, and high performance computing and coding methods for turbulent flow applications. Stefan also supports the teaching of ME469, Computational Methods in Fluid Mechanics, while continuing his primary career at Sandia National Laboratories as a Distinguished Member of the Technical Staff.

Education:

University of Utah

Ph.D. Department of Chemical Engineering, 1999

"Methods towards improved simulations for the oxides of nitrogen in pulverized-coal furnaces"

Professor Philip J. Smith, Advisor

Select Recent Publications:

* Domino, S. P., "On the subject of large-scale pool fires and turbulent boundary layer interactions", Phys. Fluids, 2024. (Featured)

* Domino, S. P., Wenzel, E. A, "A direct numerical simulation study for confined non-isothermal jet impingement at moderate nozzle-to-plate distances: capturing jet-to-ambient density effects", Int. J. Heat Mass Trans, 2023.

* Benjamin, M., Domino, S. P., Iaccarino, G., "Neural networks for large eddy simulations of wall-bounded turbulence: numerical experiments and challenges", Eur. Phys. J. E., 2023.

* Hubbard, J., Cheng, M., Domino, S. P., "Mixing in low-Reynolds number reacting impinging jets in crossflow", J. Fluids Engr., 2023.

* Domino, S. P. “Unstructured finite volume approaches for turbulence,” in Numerical Methods in Turbulence Simulation, edited by R. Moser (Elsevier, 2023), Ch. 7, pp. 285–317.

* Scott, S., Domino, S. P., "A computational examination of large-scale pool fires: variations in crosswind velocity and pool shape", Flow, 2022.

* Domino, S. P., Horne, W., "Development and deployment of a credible unstructured, six-DOF, implicit low-Mach overset simulation tool for wave energy applications", Renew. Energy, 2022.

* Hubbard, J., Hansen, M., Kirsch, J., Hewson, J., Domino, S. P., “Medium scale methanol pool fire model validation”, J. Heat Transfer, 2022.

* Barone, M., Ray, J., Domino, S. P., "Feature selection, clustering, and prototype placement for turbulence datasets", AIAA J., 2021,

* Domino, S. P., Hewson, J., Knaus, R., Hansen, M., "Predicting large-scale pool fire dynamics using an unsteady flamelet- and large-eddy simulation-based model suite", Phys. Fluids, 2021. (Editor's pick)

* Domino, S. P., "A case study on pathogen transport, deposition, evaporation and transmission: linking high-fidelity computational fluid dynamics simulations to probability of infection", Int. J. CFD, 2021.

* Domino, S. P., Pierce, F., Hubbard, J., "A multi-physics computational investigation of droplet pathogen transport emanating from synthetic coughs and breathing", Atom. Sprays, 2021.

* Jofre, L., Domino, S. P., Iaacarino, G., "Eigensensitivity analysis of subgrid-scale stresses in large-eddy simulation of a turbulent axisymmetric jet", Int. J. Heat Fluid Flow, 2019.

* Domino, S. P., Sakievich, P., Barone, M., "An assessment of atypical mesh topologies for low-Mach large-eddy simulation", Comp. Fluids, 2019.

* Domino, S. P., "Design-order, non-conformal low-Mach fluid algorithms using a hybrid CVFEM/DG approach ", J. Comput. Physics, 2018.

* Jofre, L., Domino, S. P., Iaacarino, G., "A Framework for Characterizing Structural Uncertainty in Large-Eddy Simulation Closures", Flow Turb. Combust., 2018.

CV: https://github.com/spdomin/Present/blob/master/cv/dominoCV.pdf