Stanford

Stefan P. Domino

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

Bio

BIO

Dr. Stefan Domino's research interest rests within low-Mach fluid mechanics methods development for marine ethology-based 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. Through his ICME Adjunct Professor appointment, Stefan supports the teaching of Computational Methods in Fluid Mechanics, is a former Distinguished Member of the Technical Staff at Sandia National Laboratories, and is the CEO of the 501(c)(3) Computational Marine Ethology Research Institute, https://www.comeri.org

Education: University of Utah

Ph.D. Department of Chemical Engineering, 2000

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

Professor Philip J. Smith, Advisor

Select Recent Publications:

* Domino, S. P., Scott, S., Hubbard, J., "Structural uncertainty assessment for fire-engulfed objects in crosswind: Establishing credibility for a multiphysics wall-modeled large-eddy simulation paradigm", Phys. Rev. Fluids, 2025.

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

* 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.

* 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/spdomino/cv/blob/main/dominoCV.pdf