Stanford



Stefan P. Domino

Visiting Scholar, Mechanical Engineering - Center for Turbulence Research

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. Stefan supports Stanford's School of Engineering including roles as an Adjunct Professor and Visiting Senior Fellow at the Center for Turbulence Research, 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