




TONY SAAD

last updated January 10, 2024

Department of Chemical Engineering The University of Utah 50 S Central Campus Drive, MEB 2286 Salt Lake City, UT 84112, USA	Office: (801) 585-0344 tony.saad@utah.edu www.tsaad.net   	Peer Reviewed: 31	citations: 635
		Conference: 44	h-index: 15
		Invited: 14	i10-index: 23
		Preprints: 5	

Expertise scientific computing, computational physics, numerical methods, computational fluid dynamics, applied mathematics, fluid mechanics, perturbation methods, modeling, reacting flows.

EMPLOYMENT

Assistant Professor	Dept. of Chemical Engineering, Univ. of Utah	Jan 2017 –
Research Associate	Institute for Clean & Secure Energy, Univ. of Utah	2012 – 2016
Postdoctoral Fellow	Institute for Clean & Secure Energy, Univ. of Utah	2010 – 2012

EDUCATION

Ph.D.	Mechanical Eng', Univ. of Tennessee Space Institute	2010
M.E.	American University of Bierut	2005
B.E.	Notre Dame University	2003

TEACHING

Numerical Methods	2017, 2018, 2020, 2021, 2022, 2023, 2024	CHEN 2450
Graduate Fluid Mechanics	2019, 2021, 2022, 2023	CHEN 6353
Computational Fluid Dynamics	2019, 2024	CHEN 6355

Innovations in Teaching

- **YouTube Channel: Professor Saad Explains** Education focused youtube channel established in 2019 to expand educational outreach efforts. Stats: 2,780 subscribers, 246,000 views, 15,300 hours of watch time (last reported Jan 8, 2024).
- **CadmusTA** An AI-based teaching assistant, trained on lecture notes, lecture audio transcripts, assignments, student Q&A.
- **Immersive Online Teaching Environment** Using a green screen, I developed a production environment for immersive synchronous teaching where I can place myself within the lecture notes and deliver as if I am teaching in person (example: <https://youtu.be/y0v1Yr8bFbg>).
- **Python:** Lead the effort to switch from Matlab to Python in the Department of Chemical Engineering at the University of Utah.
- **Jupyter Notebooks** Pioneered the use Jupyter notebooks and Python across the University of Utah Campus.
- **Jupyter Hub** Worked closely with the Center for High Performance Computing (CHPC) at the University of Utah to develop a central hub for Python programming to help students learn how to code.
- **Notebooks with GAPS** Teach programming by providing code "with gaps" Introduced the use of for effective teaching of programming using Jupyter Notebooks.
- **uCFD: Four Steps to Navier-Stokes**, a learner-centric effective CFD curriculum - students had working CFD code in 3 weeks (ucfd.tsaad.net).
- **github repositories for numerical methods** (CH EN 2450 - [rb.gy/n2glva](https://github.com/tony-saad/n2glva)) and computational fluid dynamics (CHEN 6355 - [rb.gy/3vwz0o](https://github.com/tony-saad/3vwz0o)) with numerous examples and notebooks with GAPS.

SERVICE

Internal

- University of Utah retirement committee, Dec. 2022 - Present

- One of two University of Utah National Nominees for Blavatnik National Award - 2021
- Undergraduate Committee, Chemical Engineering, Dec. 2021 - Present
- College of Engineering Math Committee, Chair, Jan 2017 - Present
- Served on supervisory committee of 10 Ph. D. students
- Participated in undergraduate and graduate recruiting events

External

- Chair, 2023, APS DFD Annual Meeting, Washington DC, Nov. 2023, CFD Algorithms Session
- Reviewer: Fifth International Conference on Advances in Computational Tools for Engineering Applications, 2023
- Associate Editor: International Journal of Computational Fluid Dynamics, 2022 - 2024
- Guest Editor: CFD and COVID, International Journal of Computational Fluid Dynamics, 2021
- Proposal Reviewer for University Coalition for Fossil Energy Research (UCFER), 2020
- Co-Organizer, American Physical Society Division of Fluid Dynamics Annual Meeting, 2024
- Reviewer for: Nature, Atmosphere, Combustion Theory and Modelling, Flow Turbulence and Combustion, International Journal of Energetic Materials and Chemical Propulsion, AIAA Journal, Physics of Fluids, Journal of Computational Physics, Journal of Fluid Mechanics
- Chair, 2020, AIAA Fluid Dynamics Conference, Reacting Flows Session
- Co-Organizer, 2019, Fourth International Conference on Advances in Computational Tools for Engineering Applications
- Organizer, 2019, Minisymposium on heterogeneous architectures at SIAM CSE19
- Chair, 2018, Rocky Mountain Fluid Mechanics Symposium
- Chair, 2013, AIAA student conference

Misc

- CFD-Online Wiki: Administrator and author (<http://www.cfd-online.com/Wiki>). Contributed documentation on turbulence modeling. Moderate discussions and wiki contributions.
- Please Make a Note: Founder and author - online educational and tips blog with over 10,000 visitors/month (<http://pman.tsaad.net>)
- Creator and editor, turbulence.utah.edu (August 2017 - present). Website dedicate for generating synthetic turbulence data for use in modeling and simulation of turbulent flows. Over 6,500 scientists and engineers have visited the site since 2017 to use the online code and download data.
- OpenFoam adoption of our synthetic turbulence generation method (rb.gy/wgtmmr).

STUDENTS

Name	Degree	Graduation Year	Notes
Maher Eid	Ph.D.	2027	
Dallin Littlewood	Ph.D.	2026	
Hayden Hedworth	Ph.D.	2023	Defended Dec. 2023
Mokbel Karam	Ph.D.	2022	Defended Nov. 2022
Arianna Carter	B.S.	2023	2 x UROP Winner
Nicholas Baker	B.S.	2023	2 x UROP Winner
Austin Richards	B.S.	2019	2 x UROP Winner
Collin Hoggard	B.S.	2019	UROP Winner
Giovanna Ruai Roth	B.S.	2019	UROP Winner

FUNDED RESEARCH PROJECTS

Year	Agency	\$	Role	Short Title
2022	National Science Foundation	\$252,703	PI	Fast Reacting Navier-Stokes Solvers
2021	National Science Foundation	\$174,528	PI	Optimum sensor housing and placement on Drones
2020	Salt Lake County/CARES Act	\$28,612	PI	Simulation of SARS-CoV-2 dispersion on orchestra stage
2020	Utah Division of Air Quality	\$92,463	PI	Validation and simulation of drone ozone measurements in the Uinta basin
2019	University of Utah	\$27,170	PI	Air pollution measurement using drones
2017	Wave CPC Inc.	\$29,307	PI	High-performance wave propagation code
Total:		\$604,783		

MEDIA EXPOSURE

Date	Organization	Title	link
6/28/2021	The Smithsonian Magazine	To Reduce Covid-19 Risks in Orchestras, Move Wind Instruments to the Sidelines	http://rb.gy/6gnd8h
6/23/2021	Phys.org	Rearranging orchestral musicians to reduce disease-spreading aerosols	http://rb.gy/mae0jy
6/23/2021	The New York Times	Musical Chairs? Swapping Seats Could Reduce Orchestra Aerosols	http://rb.gy/pxbk6x
	New Scientist	Turning orchestras inside out could lower risk of spreading covid-19	http://rb.gy/immwfk
	Science News	How relocating musicians can reduce COVID-19 risk at concerts	http://rb.gy/9gwfn
1/22/2021	Student Innovation at the U Report	Keeping the Doors Open at Abravanel Hall	
9/25/2020	KUER NPR Utah	Music (And COVID) In The Air: Scientists Model Airflow On The Abravanel Hall Stage To Assess Risk	http://rb.gy/iksykr
9/21/2020	Deseret News	Researchers recommend tweaks for safe symphony performances	http://rb.gy/nvkxxk
9/18/2020	Salt Lake Magazine	The Utah Symphony REIMAGINED	http://rb.gy/uzlymf
	Newswise	Blowin' in the Wind	rb.gy/hkofof
9/17/2020	KSL newsradio	Jeff Caplan's Afternoon News	rb.gy/sardj9
	U of U	Blowin' in the Wind	rb.gy/oxbahn
	ABC4 Utah	U of U engineers conduct study to help stop the spread of airflow between musicians	rb.gy/fl83ej
	Channel 5	10 PM News	rb.gy/dtluhe

RESEARCH

Journal:	31	citations:	635	Google Scholar Research Gate
Conference:	44	h-index:	15	
Invited:	14	i10-index:	23	
Preprint:	5			

Peer Reviewed Journal Articles (31 Journal Articles)

- 2023 M. Karam and **T. Saad**. On the Theory of Fast Projection Methods for High-Order Navier-Stokes Solvers. *Journal of Computational Physics*, page 112557, Oct. 2023. (doi:10.1016/j.jcp.2023.112557)
- 2022 M. Karam and **T. Saad**. High-order pressure estimates for Navier-Stokes Runge-Kutta solvers using stage pseudo-pressures. *Journal of Computational Physics*, page 111602, Sept. 2022. (doi:10.1016/j.jcp.2022.111602)

- 2022 H. Hedworth, J. Page, J. Sohl, and **T. Saad**. Investigating Errors Observed during UAV-Based Vertical Measurements Using Computational Fluid Dynamics. *Drones*, 6(9):253, Sept. 2022. (doi:10.3390/drones6090253)
- 2022 **T. Saad** and M. Karam. Stable timestep formulas for high-order advection-diffusion and navier–stokes solvers. *Computers & Fluids*, page 105564, 2022
- 2022 M. Karam and **T. Saad**. Improvements to a Fast Projection Method for the Navier-Stokes Equations. *AIAA Journal*, In Press, Mar. 2022. (doi:10.2514/1.J061546)
- 2022 M. Karam and **T. Saad**. High-order pressure estimates for projection-based Navier-Stokes solvers. *Journal of Computational Physics*, 452:110925, Mar. 2022. (doi:10.1016/j.jcp.2021.110925)
- 2021 **T. Saad**. Special Issue: CFD and Covid-19. *International Journal of Computational Fluid Dynamics*, 35(9):707–707, Oct. 2021. (doi:10.1080/10618562.2022.2042903)
- 2021 H. A. Hedworth, J. Page, J. Sohl, and **T. Saad**. Evaluating the Accuracy of UAV-Based Vertical Measurements. In *AICHE Annual Meeting. Boston, MA. Nov. 2021*, Nov. 2021
- 2021 H. A. Hedworth, M. Karam, J. McConnell, J. C. Sutherland, and **T. Saad**. Mitigation strategies for airborne disease transmission in orchestras using computational fluid dynamics. *Science Advances*, 7(26):eabg4511, June 2021. (doi:10.1126/sciadv.abg4511). Publisher: American Association for the Advancement of Science Section: Research Article
- 2021 M. Karam and **T. Saad**. BuckinghamPy: A Python software for dimensional analysis. *SoftwareX*, 16:100851, Dec. 2021. (doi:10.1016/j.softx.2021.100851)
- 2021 M. Karam, J. C. Sutherland, and **T. Saad**. Low-cost Runge-Kutta integrators for incompressible flow simulations. *Journal of Computational Physics*, page 110518, June 2021. (doi:10.1016/j.jcp.2021.110518)
- 2020 H. A. Hedworth, T. Sayahi, K. E. Kelly, and **T. Saad**. The effectiveness of drones in measuring particulate matter. *Journal of Aerosol Science*, page 105702, Nov. 2020. (doi:10.1016/j.jaerosci.2020.105702)
- 2020 M. Karam, J. C. Sutherland, and **T. Saad**. PyModPDE: A python software for modified equation analysis. *SoftwareX*, 12:100541, July 2020. (doi:10.1016/j.softx.2020.100541)
- 2019 **T. Saad** and G. Ruai. PyMaxEnt: A Python software for maximum entropy moment reconstruction. *SoftwareX*, 10:100353, July 2019. (doi:10.1016/j.softx.2019.100353)
- 2019 B. Peterson, A. Humphrey, D. Sunderland, J. Sutherland, **T. Saad**, H. Dasari, and M. Berzins. Automatic Halo Management for the Uintah GPU-Heterogeneous Asynchronous Many-Task Runtime. *International Journal of Parallel Programming*, 47(5):1086–1116, Dec. 2019. (doi:10.1007/s10766-018-0619-1)
- 2017 **T. Saad** and J. Majdalani. Extension of Kelvin’s minimum energy theorem to incompressible fluid domains with open regions. *Journal of Fluid Mechanics*, 825:208–212, Aug. 2017. (doi:10.1017/jfm.2017.413)
- 2017 **T. Saad** and J. Majdalani. Viscous Mean Flow Approximations for Porous Tubes with Radially Regressing Walls. *AIAA Journal*, 55(11):3868–3880, July 2017. (doi:10.2514/1.J055949)
- 2017 **T. Saad**, D. Cline, R. Stoll, and J. C. Sutherland. Scalable Tools for Generating Synthetic Isotropic Turbulence with Arbitrary Spectra. *AIAA Journal*, 55(1):327–331, Jan. 2017. (doi:10.2514/1.J055230)
- 2016 **T. Saad** and J. C. Sutherland. Comment on “Diffusion by a random velocity field” [Phys. Fluids 13, 22 (1970)]. *Physics of Fluids (1994-present)*, 28(11):119101, Nov. 2016. (doi:10.1063/1.4968528)
- 2016 **T. Saad** and J. C. Sutherland. Wasatch: An architecture-proof multiphysics development environment using a Domain Specific Language and graph theory. *Journal of Computational Science*, 17:639–646, Nov. 2016. (doi:10.1016/j.jocs.2016.04.010)
- 2015 A. W. Abboud, B. B. Schroeder, **T. Saad**, S. T. Smith, D. D. Harris, and D. O. Lignell. A numerical comparison of precipitating turbulent flows between large-eddy simulation and one-dimensional turbulence. *AICHE Journal*, 61(10):3185–3197, Oct. 2015. (doi:10.1002/aic.14870)

- 2015 **T. Saad**, A. W. Abboud, S. T. Smith, and T. A. Ring. A class of exact solutions for population balances with arbitrary internal coordinates. *AIChE Journal*, pages n/a–n/a, Jan. 2015. (doi:10.1002/aic.14739)
- 2013 D. S. Crawford, **T. Saad**, and T. A. Ring. Verification and validation of the maximum entropy method for reconstructing neutron flux, with MCNP5, Attila-7.1.0 and the GODIVA experiment. *Annals of Nuclear Energy*, 53:188–191, Mar. 2013. (doi:10.1016/j.anucene.2012.09.010)
- 2012 **T. Saad** and J. Majdalani. Some thoughts on the pressure integration requirements of the Navier-Stokes equations. *Fluid Dynamics Research*, 44(6):065508, Oct. 2012. (doi:10.1088/0169-5983/44/6/065508)
- 2012 B. A. Maicke, **T. Saad**, and J. Majdalani. On the compressible Hart-McClure and Sellars mean flow motions. *Physics of Fluids*, 24(9):096101, 2012. (doi:10.1063/1.4748349)
- 2009 **T. Saad** and J. Majdalani. On the Lagrangian optimization of wall-injected flows: From the Hart-McClure potential to the Taylor-Culick rotational motion. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 466(2114):331–362, Feb. 2010. (doi:10.1098/rspa.2009.0326)
- 2009 **T. Saad** and J. Majdalani. Rotational Flowfields in Porous Channels with Arbitrary Headwall Injection. *Journal of Propulsion and Power*, 25(4):921–929, July 2009. (doi:10.2514/1.41926)
- 2008 M. Darwish, **T. Saad**, and Z. Hamdan. Parallelization of an Additive Multigrid Solver. *Numerical Heat Transfer, Part B: Fundamentals: An International Journal of Computation and Methodology*, 54(2):157, 2008. (doi:10.1080/10407790802182638)
- 2007 O. C. Sams, J. Majdalani, and **T. Saad**. Mean Flow Approximations for Solid Rocket Motors with Tapered Walls. *Journal of Propulsion and Power*, 23(2):445–456, Mar. 2007. (doi:10.2514/1.15831)
- 2007 J. Majdalani and **T. Saad**. The Taylor-Culick profile with arbitrary headwall injection. *Physics of Fluids*, 19(9):093601–10, 2007. (doi:10.1063/1.2746003)
- 2006 **T. Saad**, O. C. Sams, and J. Majdalani. Rotational flow in tapered slab rocket motors. *Physics of Fluids*, 18(10):103601, 2006. (doi:10.1063/1.2354193)

Conference Proceedings and Presentations (44 conference presentations)

- 2023 H. A. Hedworth and **T. Saad**. Does Drone Airflow Compromise Atmospheric Measurements using on-board Sensors: A Simulation and Generalized Scaling Approach. In *AIAA 2023 CFD Conference*, Aug. 2023
- 2022 H. A. Hedworth, J. Sohl, and **T. Saad**. Estimating Error in UAV-Based Measurements Using CFD. In *2022 Utah Science for Solutions*, Salt Lake City, UT, 2022
- 2021 **T. Saad**. Is it Safe for Orchestras to Keep their Doors Open during a Pandemic? Here’s what we found. In *ISES2021: Multisector Engagement for Addressing Emerging Environmental Exposures*, Aug. 2021
- 2021 H. A. Hedworth, M. Karam, J. McConnell, J. Sutherland, and **T. Saad**. Mitigating the Spread of Infectious Disease in Orchestras. In *AIAA 2021 CFD Conference*, Aug. 2021
- 2021 H. A. Hedworth, J. Sohl, and **T. Saad**. Vertical Ozone Profiles on the Wasatch Front. In *2021 Utah Science for Solutions*, Salt Lake City, UT, Mar. 2021
- 2020 J. T. McConnell, **T. Saad**, and J. C. Sutherland. An Explicit Low-Mach Projection Method for Modeling Flows with Finite-Rate Chemistry. *AIAA AVIATION Forum*, June 2020. (doi:10.2514/6.2020-3035)
- 2019 M. Karam, J. C. Sutherland, M. Hansen, and **T. Saad**. A Framework for Analyzing the Temporal Accuracy of Pressure Projection Methods. *2019 AIAA Computational Fluid Dynamics Conference*, page 3634, 2019. (doi:10.2514/6.2019-3634)
- 2019 A. Richards and **T. Saad**. Accelerated Turbulence Generation via CUDA & Parallel Computing. In *13th Utah Conference on Undergraduate Research*, Weber State University, Feb. 2019
- 2019 M. Karam and **T. Saad**. On a Class of High-Order, Low-Cost Time Integrators for the Navier-Stokes Equations. In *2019 Rocky Mountain Fluid Mechanics Symposium*, Aug. 2019

- 2019 G. Ruai and **T. Saad**. An Open Source Python Code for Maximum Entropy. In *13th Utah Conference on Undergraduate Research*, Weber State University, Feb. 2019
- 2018 **T. Saad** and J. C. Sutherland. Case Studies in Using a DSL and Task Graphs for Portable Reacting Flow Simulations. In *SIAM Conference on Computational Science and Engineering*, 2018. SIAM Conference on Computational Science and Engineering
- 2018 M. Karam, F. Najjar, J. Ming, J. Sutherland, and **T. Saad**. Applying Machine Learning to the Sedov-von Neumann-Taylor Blast Wave. In *2018 Rocky Mountain Fluid Mechanics Symposium*, Aug. 2018
- 2018 **T. Saad**, M. Karam, and J. C. Sutherland. An Explicit Variable-Density Projection Method for Low-Mach Reacting Flows on Structured Uniform Grids. *AIAA 2018 Fluid Dynamics Conference*, June 2018. (doi:10.2514/6.2018-4266)
- 2018 A. Richards, **T. Saad**, and J. C. Sutherland. A Fast Turbulence Generator using Graphics Processing Units. *AIAA 2018 Fluid Dynamics Conference*, June 2018. (doi:10.2514/6.2018-3559)
- 2017 J. McConnell, **T. Saad**, and J. C. Sutherland. Coupling an explicit lowMach projection scheme to various chemistry models and interphase source terms. In *10th US National Combustion Meeting*, Maryland, Apr. 2017
- 2017 B. Goshayeshi, **T. Saad**, and J. C. Sutherland. Hybrid Computing In Large-Scale Multiphysics Simulation: Tabulated Properties and Particle-Cell Interpolations. In *SIAM Conference on Computational Science and Engineering*, 2017. SIAM Conference on Computational Science and Engineering
- 2017 **T. Saad** and J. C. Sutherland. Case Studies in Using a DSL and Task Graphs for Portable Reacting Flow Simulations. In *SIAM Conference on Computational Science and Engineering*, 2017. SIAM Conference on Computational Science and Engineering
- 2016 **T. Saad** and J. C. Sutherland. An Explicit Variable-Density Projection Method for Low-Mach Reacting Flows on Structured Uniform Grids. In *AICHE Annual Meeting*, San Francisco, CA, USA, Nov. 2016
- 2015 **T. Saad**, A. Bagusetty, and J. C. Sutherland. Wasatch: A CPU/GPU-Ready Multiphysics Code using a Domain Specific Language. In *SIAM Conference on Computational Science and Engineering*, Salt Lake City, UT, Mar. 2015
- 2015 **T. Saad**, C. Earl, A. Bagusetty, M. Might, and J. C. Sutherland. Uintah/Wasatch: Addressing Multiphysics Complexity in a High-Performance Computing Environment. In *SIAM Conference on Computational Science and Engineering*, Salt Lake City, UT, Mar. 2015
- 2014 J. C. Sutherland, M. Might, C. Earl, and **T. Saad**. Design Paradigms to Accommodate Architectural Uncertainty in Multiphysics Applications. In *SIAM Parallel Processing Conference*, Portland, OR, Feb. 2014
- 2014 A. Fist, J. Majdalani, and **T. Saad**. Energy Steepened States of the Swirling Mean Flow in a Solid Rocket. *50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, 2014. (doi:10.2514/6.2014-4017)
- 2013 J. Schmidt, M. Berzins, J. Thornock, **T. Saad**, and J. Sutherland. Large Scale Parallel Solution of Incompressible Flow Problems using Uintah and Hypre. In *International Symposium on Cluster, Cloud and Grid Computing*, Delft, Netherlands, May 2013
- 2013 A. W. Abboud, **T. Saad**, J. Thornock, and S. T. Smith. Large Eddy Simulation of a Precipitate Flow With QMOM. In *AICHE Annual Meeting*, San Francisco, CA, USA, Nov. 2013
- 2013 A. Biglari, **T. Saad**, and J. C. Sutherland. A Time-Accurate Pressure Projection Method for Reacting Flows. In *SIAM Numerical Combustion Conference*, San Antonio, TX, Apr. 2013
- 2013 A. Biglari, **T. Saad**, and J. C. Sutherland. An Efficient and Explicit Pressure Projection Method for Reacting Flow Simulations. In *8th National US Combustion Meeting*, pages 1–14, Salt Lake City, UT, May 2013
- 2012 C. W. Earl, D. Robison, **T. Saad**, J. C. Sutherland, and M. Might. Automated Algorithm Construction for Large Scale Computational Physics and Reacting Flow Simulations : Software Infrastructure. In *Parallel Computational Fluid Dynamics*, Atlanta, GA, May 2012

- 2012 A. W. Abboud, S. T. Smith, **T. Saad**, and J. Thornock. Modeling Precipitation Reactions in Turbulent Flow with QMOM Incorporated Into LES. In *AIChE Annual Meeting*, Pittsburgh, PA, USA, Oct. 2012
- 2011 J. C. Sutherland and **T. Saad**. A Novel Computational Framework for Reactive Flow and Multiphysics Simulations. In *AIChE Annual Meeting*, Minneapolis, MN, Oct. 2011
- 2011 **T. Saad**, S. T. Smith, A. W. Abboud, and T. A. Ring. On a Class of Analytical Solutions for the Population Balance Equation. In *AIChE Annual Meeting*, Minneapolis, Minnesota, USA, Oct. 2011
- 2011 A. W. Abboud, S. T. Smith, **T. Saad**, and T. A. Ring. A Study of Population Balance Modeling in a Large-Eddy Simulation with Carbonate Precipitation. In *AIChE Annual Meeting*, Minneapolis, Minnesota, USA, Oct. 2011
- 2011 D. Robinson, N. Punati, **T. Saad**, and J. C. Sutherland. A Novel Computational Approach for Multiphysics and Reactive Flow Simulations. In *Proceedings of the Combustion Institute*, 2011
- 2011 Tony Saad, Brian A. Maicke, and J. Majdalani. Coordinate Independent Forms of the Compressible Potential Flow Equations. *47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, July 2011. (doi:10.2514/6.2011-5862)
- 2011 **T. Saad** and J. Majdalani. Viscous Flows Revisited in Simulated Rockets with Radially Regressing Walls. *47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, July 2011. (doi:10.2514/6.2011-5860)
- 2011 J. C. Sutherland and **T. Saad**. The Discrete Operator Approach to the Numerical Solution of Partial Differential Equations. *20th AIAA Computational Fluid Dynamics Conference*, pages AIAA–2011–3377, June 2011. (doi:10.2514/6.2011-3377)
- 2010 **T. Saad** and J. Majdalani. Pressure Integration Rules and Restrictions for the Navier-Stokes Equations. *40th AIAA Fluid Dynamics Conference and Exhibit*, June 2010. (doi:10.2514/6.2010-4288)
- 2010 **T. Saad** and J. Majdalani. Extension of Kelvin’s Minimum Energy Theorem to Flows with Open Regions. *40th AIAA Fluid Dynamics Conference and Exhibit*, June 2010. (doi:10.2514/6.2010-4287)
- 2010 B. A. Maicke and J. Majdalani. On the Compressible Hart-McClure Mean Flow Motion in Simulated Rocket Motors. *46th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, 2010. (doi:10.2514/6.2010-7077)
- 2009 **T. Saad** and J. Majdalani. Energy Based Solutions of the Bidirectional Vortex with Multiple Mantles. *45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, Aug. 2009. (doi:10.2514/6.2009-5305)
- 2008 **T. Saad** and J. Majdalani. Energy based solutions of the bidirectional vortex. *44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, July 2008. (doi:10.2514/6.2008-4832)
- 2008 **T. Saad** and J. Majdalani. Energy Based Mean Flow Solutions for Slab Hybrid Rocket Chambers. *44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, July 2008. (doi:10.2514/6.2008-5021)
- 2007 **T. Saad** and J. Majdalani. Energy Steepened States of the Taylor-Culick Profile. *43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, July 2007. (doi:10.2514/6.2007-5797)
- 2007 **T. Saad** and J. Majdalani. The Taylor Profile in Porous Channels with Arbitrary Headwall Injection. *37th AIAA Fluid Dynamics Conference and Exhibit*, June 2007. (doi:10.2514/6.2007-4120)
- 2005 **T. Saad**. Implementation and Performance Analysis of a Parallel Algebraic Multigrid Solver. In *4th FEA Student Conference at the American University of Beirut*, Riad El Solh, Lebanon, May 2005
- Book Chapters, Reports, and Preprints (5 items)**
- 2019 **T. Saad**. Timestep Cost Analysis of Pressure-and Density-Based Methods. *ResearchGate*, May 2019. (doi:10.13140/RG.2.2.17472.58886)
- 2019 **T. Saad**. The Amazing Taylor (-Green?) Vortex. *ResearchGate*, 2019.

(doi:10.13140/RG.2.2.17695.41120)

2019 **T. Saad**. The Effectiveness of the Taylor Vortex as a Verification Tool. *ResearchGate*, 2019. (doi:10.13140/RG.2.2.14946.99527)

2012 Majdalani, J., and **Saad, T.**, (2012). **Internal Flows Driven by Wall-Normal Injection**, *Advanced Fluid Dynamics*, Prof. Hyoung Woo Oh (Ed.), ISBN: 978-953-51-0270-0, In-Tech, Available from: <http://www.intechopen.com/books/advanced-fluid-dynamics/internal-flows-driven-by-wall-normal-injection>.

2011 **T. Saad**. Turbulence Modeling for Beginners, [CFD-Online Preprint](#).

Invited Talks (14 talks)

2024. The Worst Talk of My Life. University of Utah, 01/12/2024.

2022. An Introduction to Computational Fluid Dynamics. Weber State University, 10/12/2022. (Joint with Hayden Hedworth).

2021. How to fail in grad school. University of Utah, 11/16/2021.

2021. Can orchestras keep their doors open during a pandemic? A Case Study Using CFD to Model covid19 Transmission. Brigham Young University, 10/11/2021.

2021. Can orchestras keep their doors open during a pandemic? A Case Study Using CFD to Model covid19 Transmission. University of Balamand, Lebanon, 05/06/2021.

2021. Can orchestras perform safely during a pandemic? A case study using CFD to model airborne viral transport. University of Vermont, 02/19/2021.

2021. How we used CFD to help the Utah Symphony Perform Safely during COVID19. Auburn University, 01/21/2021.

2021. The Utah Symphony, Reimagined, using CFD. ERCOFTAC Meeting, 01/15/2021.

2020. Symphonies Reimagined using CFD. Notre Dame University, 11/30/2020.

2020. The Utah Symphony, Reimagined, using CFD. University of Utah, 11/16/2020.

2020. Why CFD Needs a Facelift? Brigham Young University, 01/23/2020.

2019. Why CFD Needs a Facelift? Colorado School of Mines, 04/30/2019.

2017. What are Low-Mach Reacting Flows and How to Compute Them? National Institute for Standards and Technology (NIST), 05/17/2017.

2017. Why do Computational Scientists Complain? University of Utah, 04/19/2017.

LANGUAGES

Fluent in English, French, and Arabic.

Last updated, January 10, 2024