

Publications Thermo-Fluid Dynamics Group

February 4, 2025

Reviewed journal articles or conference proceedings

1. M. Merk, F. Schily, W. Polifke, and W. Polifke. A jacobian-based framework for the derivation of comprehensive thermoacoustic jump conditions. *Combustion and Flame*, 274:113958, 2025.
2. T. A. Do, Á. Brito Gadeschi, G. Varillon, and A. Jocher. On the generation of entropy waves in the dilution zone of a rich-quench-lean combustion chamber. *Proceedings of ASME Turbo Expo 2025*, Memphis, USA, 2025-06-16/2025-06-20.
3. G. Varillon, T. L. Kaiser, P. Brokof, D. Weißbach, K. Oberleithner, and W. Polifke. Coupling mechanisms in a cold compressible swirling jet representative of combustion applications. *submitted to the Journal of Fluid Mechanics*, 2025.
4. A. M. Garcia, S. Le Bras, J. Prager, I. Boxx, and W. Polifke. Impact of h₂-enrichment on the response of a partially premixed ch₄-air flame to velocity and equivalence ratio fluctuations. *Combustion and Flame*, 268:113595, 2024.
5. M. Désor, M. Haeringer, M. Hiestermann, K. K. Niebler, C. F. Silva, and W. Polifke. Application of an improved workflow for the identification of flame dynamics to swirl stabilized wet combustion. *Journal of Engineering for Gas Turbines and Power*, 147(3):031003, 2025.
6. A. J. Eder, M. Merk, T. Hollweck, A. Fischer, C. Lahiri, C. F. Silva, and W. Polifke. Model-based inference of flame transfer matrices from acoustic measurements in an aero-engine test rig. *Journal of Engineering for Gas Turbines and Power*, 147(3):031022, 2025.
7. M. Hiestermann, M. Haeringer, M. Désor, and W. Polifke. Comparison of non-premixed and premixed flamelets for ultra wet aero engine combustion conditions. *Journal of the Global Power and Propulsion Society*, 8:370–389, 2024.
8. P. Brokof, C. M. Douglas, and W. Polifke. The role of hydrodynamic shear in the thermoacoustic response of slit flames. *Proceedings of the Combustion Institute*, 40(1-4), 2024.
9. A. J. Eder, B. Dharmaputra, A. M. Garcia, C. F. Silva, and W. Polifke. Identification of entropy waves in a partially premixed combustor. *Proceedings of the Combustion Institute*, 40(1–4):105609, 2024.
10. C. F. Silva and W. Polifke. A new class of galerkin expansion models for the study of thermoacoustic instabilities. *Proceedings of the Combustion Institute*, 40(1-4):105242, 2024.
11. P. Brokof, G. Varillon, Y. Inoue, and W. Polifke. Towards a momentum potential theory for reacting flows. *International Journal of Spray and Combustion Dynamics*, 16(3):65–79, Sept. 2024.
12. G. Varillon, T.-L. Kaiser, P. Brokof, K. Oberleithner, and W. Polifke. Linear analysis of a swirling jet with a realistic swirler model. *International Journal of Spray and Combustion Dynamics*, 16(3):186–199, Aug. 2024.

13. T. L. Kaiser, J. G. von Saldern, M. Goldack, W. Polifke, G. Varillon, F. Zhang, T. Zirwes, H. Bockhorn, and K. Oberleithner. On the significance of modeling turbulent transport when linearizing the governing equations of a turbulent bunsen flame. *submitted to Int. J. Spray Comb. Dynamics*, 2024.
14. N. Tathawadekar, A. Ösün, A. J. Eder, C. F. Silva, and N. Thuerey. Linear and nonlinear flame response prediction of turbulent flames using neural network models. *International Journal of Spray and Combustion Dynamics*, 16(3):93–103, 2024.
15. M. Hiestermann, M. Haeringer, M. Désor, K. Niebler, and W. Polifke. Nitrogen oxides prediction for ultra wet aero engines combustion conditions using the flamelet-generated manifold approach. *Proceedings of ASME Turbo Expo 2024 London*, 2024.
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18. G. Doehner, A. J. Eder, and C. F. Silva. A parsimonious system of ordinary differential equations for the response modeling of turbulent swirled flames. *Combustion and Flame*, 266:113408, Aug. 2024.
19. P. Bonnaire and W. Polifke. Analysis of high-frequency dynamics of a reacting jet in crossflow based on large eddy simulation. *Journal of Engineering for Gas Turbines and Power*, 146(3):031002, 2024.
20. M. Rywik, A. Zimmermann, A. J. Eder, E. Scoletta, and W. Polifke. Spatially resolved modeling of the nonlinear dynamics of a laminar premixed flame with a multilayer perceptron - convolution autoencoder network. *Journal of Engineering for Gas Turbines and Power*, 146(6):061009, 2024.
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27. G. Varillon, P. Brokof, and W. Polifke. Global linear stability analysis of a slit flame subject to intrinsic thermoacoustic instability. *Proceedings of the 29th International Congress on Sound and Vibration*. Society of Acoustics, Prague, CZ, Sept. 2023.
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Invited talks or journal contributions

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