

 List of Publications

Journal	total	since 2019
<i>Journal of Fluid Mechanics</i>	12	7
<i>Combustion and Flame</i>	7	4
<i>Journal of Sound and Vibration</i>	1	1
<i>Physics of Fluids</i>	2	–
<i>European Journal of Mechanics B Fluids</i>	2	–
<i>Journal of Engineering for Gas Turbine and Power</i>	16	7
<i>Experiments in Fluids</i>	2	–
<i>AIAA Journal</i>	4	3
<i>Int. J. of Spray and Combustion Dynamics</i>	3	3
<i>Proceedings of the Combustion Institute</i>	1	–
<i>Combustion Science and Technology</i>	1	–
<i>Journal of Propulsion and Power</i>	1	–
<i>Physical Review Fluids</i>	2	1
<i>Pflugers Archiv European Journal of Physiology</i>	1	–
<i>Journal Flow Measurement and Instrumentation</i>	1	1
<i>International Journal of Multiphase Flows</i>	1	1
<i>Wind Energy Science</i>	1	1
<i>Wind Energy</i>	1	1
<i>International Journal of Heat and Fluid Flow</i>	1	1
<i>Journal of Fluids</i>	1	1
<i>Shock Waves</i>	1	1
<i>Measurement: Sensor</i>	1	1
Total	63	34

Talks and keynotes	total
National	>20
International	>30
Invited	15

– Invited Talks –

Instabilities and coherent structures in swirling flows and their relevance for thermoacoustics, 2021. [Australasian Fluid Mechanics Society Seminar Series](#).

Analysis and control of coherent flow structures in turbulent swirl flames, 2018. [Keynote lecture](#), Fifth GDR Symposium on Flow Separation Control, IMFT, Toulouse.

Analysis and control of turbulent flows using mean field stability theory, 2018. National Metrology Institute of Germany (PTB), Berlin.

Analysis and control of coherent flow structures in turbulent swirl flames, 2017. [Keynote lecture](#), Sixth International Conference on Heat and mass transfer and hydrodynamics in swirling flows, Novosibirsk, November 21-23, 2017.

Hydrodynamic instabilities and coherent structures in swirl flames: experiments and linear stability analysis, 2017. Monash University, Melbourne.

Hydrodynamic instabilities and coherent structures in swirl flames: experiments and linear stability analysis, 2017. LadHyx, Paris.

Identification and control of large-scale coherent flow structures in turbulent flows and flames, 2017. PTB, Kolloquium der Abteilung 8.

Exploration and Control of Coherent Structures in Swirl Flames, September 2016. IUTAM Symposium on Jet Noise Modelling and Control, Ecole Polytechnique, Palaiseau.

Estimation of Flame Transfer Function from Stationary Flow Data, May 2016. TU Munich.

Instabilities and coherent structures in swirl-stabilized combustion: experiments and linear stability analysis, January 2016. Institut de Mécanique des Fluides de Toulouse.

Instabilities and coherent structures in swirl-stabilized combustion: experiments and linear stability analysis, June 2015. NASA Langley.

Strömungsinstabilitäten in drallstabilisierter Verbrennung: Einführung der mean-flow Modelle und Diskussion aktueller Erkenntnisse, September 2014. DLR Stuttgart.

Vortex breakdown in turbulent swirling jets: Empirical and theoretical investigation of its emergence and associated coherent structures, November 2010. NASA Langley.

Die Suche nach der Ordnung im Chaos, Dezember 2010. Science Slam.

Phase Reconstruction of Shear Layer Instabilities Using Proper Orthogonal Decomposition, September 2009. Institute of Thermomechanics, Prague.

– Journal Articles –

- S. Bartholomay, S. Krumbein, V. Deichmann, M. Gentsch, S. Perez-Becker, D. Soto-Valle, R. and Holst, C. N. Nayeri, C. O. Paschereit, and **K. Oberleithner**. Repetitive model predictive control for load alleviation on a research wind turbine using trailing edge flaps. *Wind Energy* (in print), 2022.
- M. Rezay Haghdoost, B. S. Thethy, M. Nadolski, B. Seo, C. O. Paschereit, R. Klein, D. Edgington-Mitchell, and **K. Oberleithner**. Numerical and experimental evaluation of shock dividers. *Shock Waves*, 2022.
- J. von Saldern, M. Eck, J. Beuth, B. Cosic, and **K. Oberleithner**. Acoustic characteristics of impingement cooling sheets; effect of bias-grazing flow interaction on the liner impedance in a thin annulus. *Journal of Sound and Vibrations* (in print), 2022.
- J. von Saldern, M. Reumschüssel, J. Beuth, O. Paschereit, and **K. Oberleithner**. Robust combustor design based on flame transfer function modification. *Journal of Spray and Combustion Dynamics* (in print), 2022.
- C. Wang, T. Kaiser, **K. Oberleithner**, M. Meindl, W. Polifke, and L. Lesshafft. Linear instability of a premixed slot flame: flame transfer function and resolvent analysis. *Combustion and Flame* (in print), 2022.
- Olbrich Marc, Hunt Andrew, Terri Leonard, Dennis S. van Putten, Markus Bär, **K. Oberleithner**, and Sonja Schmelter. Comparing temporal characteristics of slug flow from tomography measurements and video observations. *Measurement: Sensors*, 18:100222, dec 2021.
- F. Habicht, F. C. Yçel, M. Rezay Haghdoost, **K. Oberleithner**, and C. O. Paschereit. Acoustic modes in a plenum downstream of a multi-tube pulsedetonation combustor. *AIAA Journal*, 59(11):4569–4580, nov 2021.
- M. Casel, **K. Oberleithner**, F. Zhang, T. Zirwes, D. Trimis, H. Bockhorn, and T. Kaiser. Resolvent-based modelling of coherent structures in a turbulent jet flame using a passive flame approach. *Combustion and Flame*, 90:111695, feb 2021.
- F. Lückoff, T. L. Kaiser, C. O. Paschereit, and **K. Oberleithner**. Mean field coupling mechanisms explaining the impact of the precessing vortex core on the flame transfer function. *Combustion and Flame*, 223:254–266, jan 2021.
- M. Olbrich, M. Baer, **K. Oberleithner**, and S. Schmelter. Statistical characterization of horizontal slug flow using snapshot proper orthogonal decomposition. *International Journal of Multiphase Flow*, 134:103453, jan 2021.
- Amrit Adhikari, Thorge Schweitzer, Finn Lückoff, and **K. Oberleithner**. Design of a fluidic actuator with independent frequency and amplitude modulation for control of swirl flame dynamics. *Fluids*, 6(3), 2021.
- S. Bartholomay, T. T. B. Wester, S. Perez-Becker, S. Konze, C. Menzel, M. Hölling, A. Spickenheuer, J. Peinke, C. N. Nayeri, C. O. Paschereit, and **K. Oberleithner**. Pressure based lift estimation and its application to feedforward load control employing trailing edge flaps. *Wind Energy Science*, 6(1):221–245, 2021.
- T. Kaiser and **K. Oberleithner**. A global linearized framework for modelling shear dispersion and turbulent diffusion of passive scalar fluctuations. *Journal of Fluid Mechanics*, (A111), 2021.

- V. Kather, F. Lückoff, and C. O. **K. Oberleithner** Paschereit. Interaction of equivalence ratio fluctuations and flow fluctuations in acoustically forced swirl flames. *International Journal of Spray and Combustion Dynamics*, (13(1-2):72-95), 2021.
- P. Kuhn, J. Soria, and **K. Oberleithner**. Linear modeling of self-similar jet turbulence. *Journal of Fluid Mechanics*, (A7), 2021.
- J. S. Müller, F. Lueckoff, L. T. Kaiser, C. O. Paschereit, and **K. Oberleithner**. Modal decomposition and linear modeling of swirl fluctuations in the mixing section of a model combustor based on piv data. *Journal of Engineering for Gas Turbines and Powers*, 144, 2021.
- M. Reza Haghdooost, B. Thethy, D. Edgington-Mitchell, F. Habicht, J. Vinkeloe, N. Djordjevic, C. O. Paschereit, and **K. Oberleithner**. Mitigation of pressure fluctuations from an array of pulse detonation combustors. *Journal of Engineering for Gas Turbines and Powers*, (7), 2021.
- S. Schmidt, L. Tammissola, O. Lesshaft, and **K. Oberleithner**. Global stability and nonlinear dynamics of wake flows with a two-fluid interface. *Journal of Fluid Mechanics*, (A96), 2021.
- M. Sieber, C.O. Paschereit, and **K. Oberleithner**. Impact of density stratification on the global mode in a swirling jet: Stochastic modelling and lagrangian coherent structures. *International Journal of Heat and Fluid Flow*, 90:108820, 2021.
- M. Sieber, C.O. Paschereit, and **K. Oberleithner**. Stochastic modelling of a noise driven global instability in a turbulent swirling jet. *Journal of Fluid Mechanics*, (A7), 2021.
- M. Olbrich, M. Baer, **K. Oberleithner**, and S. Schmelter. Identification of coherent structures in horizontal slug flow. *Flow Measurement and Instrumentation*, 76:101814, dec 2020.
- F. C. Yücel, F. Habicht, A. Jaeschke, F. Lückoff, **K. Oberleithner**, and C. O. Paschereit. Investigation of the fuel distribution in a shockless explosion combustor. *Journal of Engineering for Gas Turbines and Power*, dec 2020.
- D. Marten, C. O. Paschereit, X. Huang, M. Meinke, W. Schröder, J. Müller, and **K. Oberleithner**. Predicting wind turbine wake breakdown using a free vortex wake code. *AIAA Journal*, 58(11):4672–4685, nov 2020.
- F. Lückoff, M. Sieber, C. O. Paschereit, and **K. Oberleithner**. Impact of the precessing vortex core on NO_x emissions in premixed swirl-stabilized flames—an experimental study. *Journal of Engineering for Gas Turbines and Power*, 142(11), oct 2020.
- M. Reza Haghdooost, D. Edgington-Mitchell, M. Nadolski, R. Klein, and **K. Oberleithner**. Dynamic evolution of a transient supersonic trailing jet induced by a strong incident shock wave. *Phys. Rev. Fluids*, 5(7), jul 2020.
- M. Reza Haghdooost, D. Edgington-Mitchell, C. O. Paschereit, and **K. Oberleithner**. High-speed schlieren and particle image velocimetry of the exhaust flow of a pulse detonation combustor. *AIAA J.*, 58(8):3527–3543, jun 2020.
- J. Mueller, F. Lueckoff, P. Paredes, V. Theofilis, and **K. Oberleithner**. Receptivity of the turbulent precessing vortex core: synchronization experiments and global adjoint linear stability analysis. *J. Fluid. Mech.*, 888(A3), jan 2020.

- M. Vanierschot, J. Müller, M. Sieber, M. Percin, Oudheusden B. W., and **K. Oberleithner**. Single and double helix vortex breakdown as two dominant global modes in turbulent swirling jet flow. *J. Fluid. Mech.*, nov 2019.
- T. Kaiser, L. Lesshafft, and **K. Oberleithner**. Prediction of the flow response of a turbulent flame to acoustic perturbations based on mean flow resolvent analysis. *J. Eng. Gas Turbines Power*, 141(11), oct 2019.
- F. Lückoff, M. Sieber, C. O. Paschereit, and **K. Oberleithner**. Phase-opposition control of the precessing vortex core in turbulent swirl flames for investigation of mixing and flame stability. *J. Eng. Gas Turbines Power*, 141(11), sep 2019.
- Kaiser T., **K. Oberleithner**, L. Selle, and T. Poinso. Examining the effect of geometry changes in industrial fuel injection systems on hydrodynamic structures with biglobal linear stability analysis. *J. Eng. Gas Turbines Power*, sep 2019.
- R. Bluemner, C. O. Paschereit, and **K. Oberleithner**. Generation and transport of equivalence ratio fluctuations in an acoustically forced swirl burner. *Combust. Flame*, 209:99–116, aug 2019.
- F. Lückoff and **K. Oberleithner**. Excitation of the precessing vortex core by active flow control to suppress thermoacoustic instabilities in swirl flames. *Int. J. Spray Combust. Dyn.*, 11:175682771985623, jan 2019.
- S. Schmidt and **K. Oberleithner**. Instability of forced planar liquid jets: mean field analysis and nonlinear simulation. *J. Fluid. Mech.*, 883(A7), 2019.
- T. Kaiser, T. Poinso, and **K. Oberleithner**. Stability and sensitivity analysis of hydrodynamic instabilities in industrial swirled injection systems. *J. Eng. Gas Turbines Power*, 140(5), jan 2018.
- J. Müller, F. Lückoff, and **K. Oberleithner**. Guiding actuator designs for active flow control of the precessing vortex core by adjoint linear stability analysis. *J. Eng. Gas Turbines Power*, 141(4):041028, 2018.
- M. Stöhr, **K. Oberleithner**, M. Sieber, Z. Yin, and W. Meier. Experimental study of transient mechanisms of bi-stable flame shape transitions in a swirl combustor. *J. Eng. Gas Turbines Power*, 140:011503, 2018.
- H. Lang, **K. Oberleithner**, C. O. Paschereit, and Sieber M. Measurement of the fluctuating temperature field in a heated swirling jet with BOS tomography. *Exp. Fluids*, 58(7), 2017.
- F. Lückoff, M. Sieber, C. O. Paschereit, and **K. Oberleithner**. Characterisation of different actuator designs for the control of the precessing vortex core in a swirl-stabilized combustor. *J. Eng. Gas Turbines Power*, 140(4):041503, 2017.
- L. Rukes, M Sieber, C. Paschereit Oliver, and **K. Oberleithner**. Transient evolution of the global mode in turbulent swirling jets: experiments and modal stability analysis. *Eur. J. Mech. B. Fluids*, 65:98–106, 2017.
- L. Rukes, C. O. Paschereit, and **K. Oberleithner**. An assessment of turbulence models for linear hydrodynamic stability analysis of strongly swirling jets. *Eur. J. Mech. B. Fluids*, 59:205–218, 2016.

- L. Rukes, M. Sieber, C. O. Paschereit, and **K. Oberleithner**. Methods for the extraction and analysis of the global mode in swirling jets undergoing vortex breakdown. *J. Eng. Gas Turbines Power*, 139(2):022604, 2016.
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- M. Sieber, F. Ostermann, R. Wozidlo, **K. Oberleithner**, and C. O. Paschereit. Lagrangian coherent structures in the flow field of a fluidic oscillator. *Phys. Rev. Fluids*, 1(5), 2016.
- M. Sieber, C. O. Paschereit, and **K. Oberleithner**. Advanced identification of coherent structures in swirl-stabilized combustors. *J. Eng. Gas Turbines Power*, 139(2):021503, 2016.
- S. Sieber, C. O. Paschereit, and **K. Oberleithner**. Spectral proper orthogonal decomposition. *J. Fluid Mech.*, 792:798–828, 2016.
- S. Terhaar, B. Ćosić, C.O. Paschereit, and **K. Oberleithner**. Suppression and excitation of the precessing vortex core by acoustic velocity fluctuations: An experimental and analytical study. *Combust. Flame*, 172:234–251, 2016.
- K. Oberleithner**, S. Schimek, and C. O. Paschereit. Shear flow instabilities in swirl-stabilized combustors and their impact on the amplitude dependent flame response: A linear stability analysis. *Combust. Flame*, 162(1):86 – 99, 2015.
- K. Oberleithner**, M. Stöhr, H. I. Seong, and A. M. Arndt, C. M. and Steinberg. Formation and flame-induced suppression of the precessing vortex core in a swirl combustor: Experiments and linear stability analysis. *Combust. Flame*, 162(8):3100–3114, 2015.
- P. Paredes, S. Terhaar, **K. Oberleithner**, V. Theofilis, and C. O. Paschereit. Global and local hydrodynamic stability analysis as a tool for combustor dynamics modeling. *J. Eng. Gas Turbines Power*, 138(2):021504, 2015.
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- K. Oberleithner**, C. O. Paschereit, and I. Wygnanski. On the impact of swirl on the growth of coherent structures. *J. Fluid Mech.*, 741:156–199, 2014.
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- H. Oberleithner, W. Peters, K. Kusche-Vihrog, S. Korte, H. Schillers, K. Kliche, and **K. Oberleithner**. Salt overload damages the glycocalyx sodium barrier of vascular endothelium. *Pflugers Arch. EJP*, 462:519–528, 2011. 10.1007/s00424-011-0999-1.
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– Peer-Reviewed Conference Proceedings –

- T. Kaiser, M. Casel, F. Zhang, T. Zirwes, D. Trimis, H. Bockhorn, and **K. Oberleithner**. Resolvent-based analysis of helical modes in a turbulent bunsen flame. In *SoTiC 2021 - Symposium on Thermoacoustics in Combustion*, year = 2021,.
- J. von Saldern, M. Reumschüssel, J. Beuth, O. Paschereit, and **K. Oberleithner**. Robust combustor design based on flame transfer function modification. In *SoTiC 2021 - Symposium on Thermoacoustics in Combustion*, year = 2021,.
- J. P. Beuth, J. G. R. Von Saldern, L. T. Kaiser, T. G. Reichel, C. O. Paschereit, B. Ćosić, and **K. Oberleithner**. Flow response of an industrial gas turbine combustor to acoustic forcing extracted from unforced data. In *Volume 4B: Combustion, Fuels and Emissions*, number GT2021-59718. *Proc. ASME Turbo Expo*, 2021.
- J. S. Müller, F. Lueckhoff, L. T. Kaiser, C. O. Paschereit, and **K. Oberleithner**. Modal decomposition and linear modeling of swirl fluctuations in the mixing section of a model combustor based on pIV data. Number GT2021-58832. *Proc. ASME Turbo Expo*, 2021.
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- M. Reza Haghdooost, B. S Thethy, M. Nadolski, R. Klein, D. Honnery, D. Edgington-Mitchell, B. Seo, C. O. Paschereit, and **K. Oberleithner**. Evaluation of Shock Dividers using Numerical and Experimental Methods. In *AIAA Scitech 2020 Forum*, page 926, Reston, Virginia, jan 2020. American Institute of Aeronautics and Astronautics.
- B. S Thethy, M. Reza Haghdooost, C. O. Paschereit, D. Honnery, D. Edgington-Mitchell, and **K. Oberleithner**. Redistribution of Transient Shock Waves Using Shock Dividers. In *AIAA Scitech 2020 Forum*, page 925, Reston, Virginia, jan 2020. American Institute of Aeronautics and Astronautics.
- F. Habicht, F. C. Yücel, M. Reza Haghdooost, , and C. O. Paschereit. Pressure fluctuations in air supply of a valveless pdc-multitube. In *ICPCD 2020*, 2020.
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- Mullyadzhyanov R., Yavorsky N., and **K. Oberleithner**. Linear stability of landau jet: non-parallel effects. *Journal of Physics: Conference Series*, 1268:012050, jul 2019.
- R. M. Haghdooost, D.M. Edgington-Mitchell, C. O. Paschereit, and **K. Oberleithner**. Investigation of the exhaust flow of a pulse detonation combustor at different operating conditions based on high-speed schlieren and pIV. In *AIAA Scitech 2019 Forum*, page 1512, 2019.
- T. Kaiser, **K. Oberleithner**, S. Laurent, and T. Poinso. Examining the effect of geometry changes in industrial fuel injection systems on hydrodynamic structures with biglobal linear stability analysis. In *Volume 4B: Combustion, Fuels and Emissions*, number GT2019-90447. *Proc. ASME Turbo Expo*, 2019.

- T. Kaiser, L. Lesshafft, and **K. Oberleithner**. Prediction of the flow response of a turbulent flame to acoustic perturbations based on mean flow resolvent analysis. In *Volume 4B: Combustion, Fuels and Emissions*, number GT2019-90438. [Proc. ASME Turbo Expo](#), 2019.
- P. Kuhn, T. L. Kaiser, J. Soria, and **K. Oberleithner**. Spectral decomposition of the turbulent self-similar jet and recombination using linear dynamics. In *11th International Symposium on Turbulence and Shear Flow Phenomena (TSFP11)*, Southampton, UK, 2019.
- F. Lückoff, M. Sieber, Paschereit C.O., and **K. Oberleithner**. Phase-opposition control of the precessing vortex core in turbulent swirl flames for investigation of mixing and flame stability. In *Volume 4B: Combustion, Fuels and Emissions*, number GT2019-90924. [Proc. ASME Turbo Expo](#), 2019.
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- J. S. Müller, **K. Oberleithner**, M. P. Eisfelder, A. Sekimoto, A.-J. Buchner, V. Kitsios, C. Atkinson, and J. Soria. Modal analysis of coherent structures in a self-similar turbulent boundary layer with adverse pressure gradient. In *11th International Symposium on Turbulence and Shear Flow Phenomena (TSFP11)*, Southampton, UK, 2019.
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