Curriculum Vitae

Christian Joachim Kähler, University of the Bundeswehr Munich, Germany

Education and scientific qualifications

- W3 professor for fluid dynamics, 30.04.2008
- PhD in physics, Georg August University Göttingen, Germany, 01.07.2004
- Diploma in physics, Technical University Clausthal, Germany, 11.04.1997

Professional career

- 2008 – today Full professor (W3) and head of the Institute for Fluid Mechanics and Aerodynamics, University of the Bundeswehr Munich
- 2001 – 2008 Group leader for the Flow Control and Measurement Technology group, Institute for Fluid Mechanics, Technical University Braunschweig
- 2000 – 2001 Researcher at the Institute for Fluid Mechanics, German Aerospace Center (DLR), Göttingen
- 1997 – 2000 PhD candidate, Institute for Nonlinear Dynamics and Selforganisation, Georg-August-University Göttingen

Research activities abroad

- 29.07.2018 – 10.09.2018 Research semester, Mechanical and Mechatronics Engineering Department, University of Waterloo, Canada, Prof. Yarusevych
- 25.07.2015 – 12.09.2015 Research semester, Engineering Graduate School, University of Southampton, UK, Prof. Ganapathisubramani
- 06.09.1998 – 17.12.1998 Research semester, California Institute of Technology (Caltech), Graduate Aeronautical Laboratories, Pasadena, California, USA, Prof. Gharib
- 18.03.1996 – 18.06.1996 Research semester, University of Illinois at Urbana Champaign (UIUC), Department of Theoretical and Applied Mechanics, Urbana, Illinois, USA, Prof. Adrian

Awards / Appointments

- 11.02.2021 Ulrich L. Rohde-Award for excellent Research
- 15.02.2017 Call from TU Darmstadt, Chair of Fluid Mechanics (W3), declined
- 17.10.2012 Call from TU Berlin, W3 Einstein-professorship for Aerodynamics, declined
- 12.03.2008 Appointment professorship for Fluid Dynamics, Head of the Institute for Fluid Mechanics and Aerodynamics, University of the Bundeswehr Munich
- 15.10.2007 Call from University of the Bundeswehr Munich, W3 professorship for Fluid Dynamics
- 1998 Research fellowship, Center for Quantitative Visualization, USA
- 1997 – 2000 PhD grant, German Aerospace Center (DLR)
- 1996 Research fellowship, University of Illinois at Urbana Champaign (UIUC), USA

Nomination and elected position

- Member of the Alexander von Humboldt Foundation's selection committee for the sponsorship of highly qualified scientists from abroad at German universities and research institutions, term of office 2023 – 2025
- Editorial board member, Physical Review Fluids, term of office 2023 – 2025
- Elected local representative of the German University Association (Deutscher Hochschulverband) at the University of the Bundeswehr Munich, since June 2023
- Vice-Chairman of the Commission for the Investigation of Scientific Misconduct, Bundeswehr University Munich, since April 2023

- Organizing Committee, International Symposium on Applications of Laser and Imaging Techniques to Fluid Mechanics, Lisbon, Portugal, since July 2022
- Scientific Committee, International Symposium on Flow Visualization, since 2022
- Elected member, senate committee on Collaborative Research Centres, Deutsche Forschungsgemeinschaft (DFG), term of office 2022 – 2024
- Elected member, grant committee on Collaborative Research Centres, Deutsche Forschungsgemeinschaft (DFG), term of office 2022 – 2024
- Member in committee of the Deutsche Kommission Elektrotechnik Elektronik Informationstechnik (DEK AK 513.0.6), Elektrische Luftreiniger für Haushalt und ähnliche Zwecke, since 2022
- Member in committee of the DIN Normenausschuss Lichttechnik (FNL), Diseinfection of room air with UV radiation (DIN/TS 67506), 2020 – 2022
- Scientific committee, International Symposium on Multiscale Multiphase Process Engineering (MMPE), since 2019
- Advisory committee, International Symposium on Turbulence and Shear Flow Phenomena, since 2019
- Co-chair of the Thematic Session entitled Experimental Methods in Mechanics, 25th International Congress of Theoretical and Applied Mechanics (ICTAM2020), Milan, Italy, August 23.–28.2020
- Scientific committee, International Symposium on Flow Visualization, since 2019
- Elected member, senate committee on Collaborative Research Centres (SFB), Deutsche Forschungsgemeinschaft (DFG), term of office 2019 – 2021
- Elected member, grant committee on Collaborative Research Centres (SFB), Deutsche Forschungsgemeinschaft (DFG), term of office 2019 – 2021
- Guest editor, Experimental Thermal and Fluid Science, Elsevier, 2018 – 2019
- International scientific advisory board of the International Conference on High-Speed Imaging and Photonics (ICHSIP), since 2018
- Elected member, editorial advisory board, Flow, Turbulence and Combustion, Springer Nature, since 2015
- Elected member, editorial board, Theoretical & Applied Mechanics Letters, Elsevier, 2015 – 2023
- Elected member, board of trustees of the German Society for Laser Anemometry (GALA e.V.), since 2015
- Organizing committee, International Symposium on PIV, since 2014
- Scientific committee, International Conference on Experimental Fluid Mechanics, since 2014
- Elected member, review board 404 of the Deutsche Forschungsgemeinschaft (DFG), term of office 2012 – 2015 and 2016 – 2018
- Associate editor, Experiments in Fluids, Springer Nature, since 2011
- Elected member, DFG annual round table discussion „Perspectives in Fluid Mechanics“, 2010 – 2022
- Editorial board of ISRN Mechanical Engineering, 2010 – 2013
- Editorial advisory board, Experiments in Fluids, Springer Nature, 2009 – 2010
- Organizing committee, 8th Euromech Fluid Mechanics Conference, Bad Reichenhall, Germany, 13.–16.09.2010
- Steering committee, International Conference on Fluid Control, Measurements, and Visualization (FLUCOME), since 2007
- Scientific committee, International Symposium on PIV, since 2007
- Advisory committee, International Symposium on Applications of Laser Techniques to Fluid Mechanics, Lisbon, Portugal, since 2006
- Organizing committee, 4th International Symposium on Particle Image Velocimetry, Göttingen, 17.–19.09.2001
- Steering committee, International PIV Challenge, since 2001

Chairman and organizer of scientific conferences

- International Symposium on Applications of Laser and Imaging Techniques to Fluid Mechanics, Lisbon, Portugal, 08 – 11 July 2024
- 30. National conference, Lasermethoden in der Strömungsmesstechnik, Munich, 05. – 07.09.2023
- 13th International Symposium on Particle Image Velocimetry (ISPIV), Munich, 22. – 24.07.2019, more than 250 participants
- 5th International Conference on Experimental Fluid Mechanics (ICEFM), Munich, 02. – 04.07.2018, more than 170 participants
- 4th International PIV Challenge, Lisbon, 05.07.2014, more than 80 participants
- 21. National conference, Lasermethoden in der Strömungsmesstechnik, Munich, 03. – 05.09.2013, more than 100 participants

Memberships (selection)

- American Physical Society (APS)
- Deutsche Physikalische Gesellschaft (DPG)
- Deutscher Hochschulverband (DHV)
- European Academy of Sciences (EUAS)
- European Research Community on Flow, Turbulence and Combustion (ERCOFTAC)
- German Association for Laser Anemometry (GALA e.V.)

Review activities

Research Funding Organizations

- Austrian Science Fund (FWF)
- Deutsche Forschungsgemeinschaft (DFG)
- Dutch Technology Foundation (STW)
- French National Research Agency (ANR)
- Innovationszentrum Niedersachsen
- Netherlands Organization for Scientific Research (NWO)
- Swedish Research Council (SRC)
- Swiss National Science Foundation (SNSF)
- Innovative Projects/Infrastructure, TU Wien

Scientific journals

- Atmosphere, MDPI
- European Journal of Mechanics B/Fluids, Elsevier
- Experiments in Fluids, Springer Nature
- Experimental Thermal and Fluid Science, Elsevier
- International Journal of Heat and Fluid Flow, Elsevier
- International Journal of Multiphase Flow, Elsevier
- Journal of Aircraft (AIAA)
- Journal of Flow, Turbulence and Combustion, Springer Nature
- Journal of Fluids and Structures, Elsevier
- Journal of Fluids Engineering, American Society of Mechanical Engineers
- Journal of Fluid Mechanics, Cambridge University Press
- Journal of the Royal Society Interface, The Royal Society Publishing
- Journal of Visualization, Springer Nature
- Measurement Science and Technology, Institute of Physics Publishing
- Microfluidics and Nanofluidics, Springer Nature
- Nature Scientific Reports
- Physical Review Fluids, APS's Division of Fluid Dynamics (DFD)
- The Aeronautical Journal, Royal Aeronautical Society

Appeal procedure professor

- University of the Bundeswehr Munich (2010, 2011, 2013, 2015, 2016, 2017, 2018, 2019, 2021)
- Delft University of Technology (2009, 2017, 2018)
- Indian Institute of Science Bangalore (2018)
- Karlsruhe Institute of Technology (2013)
- The George Washington University (2019)
- TU Braunschweig (2007)
- TU Bergakademie Freiberg (2016)
- TU Hannover (2011, 2016)
- TU Ilmenau (2014)
- TECHNICAL UNIVERSITY München (2009, 2012)
- University Bremen (2016)
- University Rostock (2014)
- University Bochum (2012)
- University of Bristol (2017)
- Wageningen University Netherlands (2013)

Habilitation:

- TU Hannover (2023)
- TU Braunschweig (2018)
- University of the Bundeswehr Munich (2014, 2016, 2018, 2021, 2022)
- TU Clausthal (2016)
- TU Munich (2012)

Doctoral procedure without University of the Bundeswehr Munich:

- Princeton University (2020)
- Delft University of Technology (2011, 2012, 2013, 2014, 2 × 2017, 2018, 2022, 2 × 2023)
- École Polytechnique Palaiseau (2017)
- Friedrich-Alexander-University Erlangen-Nürnberg (2015)
- Karlsruher Institut of Technology (2022)
- Monash University Australia (2012)
- Politecnico di Torino (2011)
- RWTH Aachen (2009, 2014, 2019, 2022)
- Technical University Braunschweig (2008, 2015, 2 × 2019)
- Technical University Dresden (2014)
- Technical University Hannover (2012)
- Technical University Ilmenau (2021)
- Technical University München (2012, 2014, 2017, 2019, 2021)
- University of the Bundeswehr Hamburg (2015)
- Universite de Rennes (2022)
- University La Sapienza Roma (2019)
- University of Melbourne (2014)

Invited plenary and keynote lectures at conferences

- The importance of fluid mechanics measurements in preventing airborne infections. 16th International Conference on Fluid Control, Measurements, and Visualization (FLUCOME), Beihang University (BUAA), Beijing, China, 26–30.11.2023
- The importance of turbulence in preventing airborne infections. 20th International Symposium on Flow Visualization (ISFV 2023), Delft University of Technology, The Netherlands, 10–13 July, 2023.

- Auswirkungen von Raumluftfiltern auf die Aerosolentwicklung in Innenräumen. 11. Fachkongress Die Klinikimmobilie der nächsten Generation, Mainz, 29. –30.06.2022
- From droplets to pandemic – How to prevent SARS-CoV-2 infections via droplets and aerosols. Symposium on Photonics Science and Technology, 16.–18.05.2021, Duke University, Durham, NC
- The problem of intermittency in open turbulent flows. 25th International Congress of Theoretical and Applied Mechanics (ICTAM2020), Milan, Italy, 23.–28.08.2020
- Ein neuer Blick auf kohärente Strömungsbewegungen in turbulenten Grenzschichten. Plenarvortrag, STAB Jahrestagung, 06.–07.11.2018
- Time-resolved high-resolution 3D PTV investigations of near-wall turbulence. International Symposium on PIV, Busan, Korea, 18.–22.07.2017
- Large-scale structures in turbulent boundary layers. Association of Applied Mathematics and Mechanics (GAMM), Braunschweig, Germany, 07.–11.3.2016
- Experimental fluid mechanics. 10th International Symposium on Engineering Turbulence Modelling and Measurements. Marbella, Spain, 17.–19.09.2014
- On the problem of measuring turbulence statistics in shear flows. International Symposium on Applications of Laser Techniques to Fluid Mechanics, Lisbon, Portugal, 07.07.2014
- Three-dimensional visualization of velocity, temperature and pressure fields with micron resolution. 16th International Symposium on Flow Visualization (ISFV16), Okinawa, Japan, 24.–28.06.2014
- The structure of high-Reynolds number turbulent boundary layers. 85th Annual Meeting of the International Association of Applied Mathematics and Mechanics, Erlangen, Germany, 10.–14.03.2014
- Can PIV replace LDA and hot-wire techniques? 17th International Symposium on Applications of Laser Techniques to Fluid Mechanics, Lissabon, Portugal, 07.–10.07.2013
- State of the art PIV recording and evaluation approaches for flow separation research. 8th International Symposium for Particle Image Velocimetry, Melbourne, Australia, 25.–28.08.2009
- The significance of turbulent eddies for the mixing in boundary layers. IUTAM Symposium on "100 Years of Boundary Layer Research", Göttingen, 11.–14.08.2004

Invited plenary lectures at workshops

- Technische Infektionsprävention. CORAERO Workshop, 18.05.2022, Augsburg
- How to prevent direct and indirect SARS-CoV-2 airborne transmission. Experiments in Fluids Seminar Series, 18.01.2022 (online)
- VKI Lecture Series on Fundamentals and Recent Advances in Particle Image and Velocimetry and Lagrangian Particle Tracking. Rhode Saint Genèse, Belgium, 15.–18.11.2021
- Übertragungswegen durch Aerosole und Maßnahmen zur Verhinderung von Ansteckungen. Pandemie 2.0 - Wie geht es weiter mit Delta an (Hoch-)Schulen und Kitas? Veranstaltet über das World Health Network, Landeselternverband Bayern Realschulen, 01.09.2021 (online)
- How to prevent SARS-CoV-2 infections via droplets and aerosols. European Research Community on Flow, Turbulence and Combustion (ERCOFTAC Pilot Center Henri Bénard). Covid 19 Flows: Fundamentals and Practical Recommendations, 05.03.2021 (online)
- Room air purifiers to reduce infection – What does science advise? Health Care Bayern e.V., 11.11.2020 (online)
- Aerosole, Lüften, Raumluftreiniger am Arbeitsplatz in Zeiten von Corona. Deutscher Gewerkschaftsbund, 13.10.2020 (online)
- Technische Lösungen zur Verhinderung von direkten und indirekten SARS-CoV-2 Infektionen. Technik gegen Corona Experten-Panel zum Thema technischer Maßnahmen gegen Verbreitung von Covid-19, München, 18.09.2020 (online)

- The huge effect of facial masks. KNAW webinar Corona: from droplets to pandemic, Royal Netherlands Academy of Arts and Sciences, 04.06.2020 (online)
- Visualization of 3D velocity and temperature fields with micron resolution. 2nd Marie Sklodowska-Curie action MIGRATE Workshop, 29.–30.06.2017, Sofia, Bulgaria
- Fundamentals of combined PSP and PIV measurements to determine the flow field pressure. 5th Workshop on Molecular Imaging Technology for Interdisciplinary Research. Tsukuba, Japan, 23.–25.09.2015
- Large-scale structures in turbulent boundary layers. Workshop on Wall Turbulence and Advanced Measurement Techniques. Lille, France, 18.–19.05.2015
- Large Reynolds number boundary layer investigation with sophisticated high-resolution imaging techniques. Workshop on High Reynolds Number Boundary Layer Turbulence: Integrating Descriptions of Statistical Structure, Scaling and Dynamical Evolution, University of New Hampshire, USA, 20.–22.11.2013
- Fundamentals in turbulence. VKI Lecture Series, Rhode Saint Genèse, Belgium, 04.11.2013
- Simultane 3D Particle Image Velocimetry und Deformationsmessung an bewegten Objekten – Methodische Herausforderungen und physikalische Grenzen. 50. Heidelberger Bildverarbeitungsforum, Institut für Hydromechanik, Karlsruher Institut für Technologie, Karlsruhe, Germany, 02.10.2012
- Single pixel PIV, single particle PTV or optical flow analysis? Resolution and uncertainty aspects. PIV Uncertainty Workshop, Las Vegas, USA, 11.–13.05.2011
- Long-range micro-PIV. VKI Lecture Series on Recent advances in Particle Image Velocimetry, Rhode Saint Genèse, Belgium, 27.01.2009
- Time resolved PIV: Systems, interrogation algorithms and applications. VKI Lecture Series on Recent advances in Particle Image Velocimetry, Rhode Saint Genèse, Belgium, 28.01.2009
- Dynamic evaluation of time resolved PIV image sequences. 1st International Workshop on Dynamic PIV, Tokio, Japan, 23.03.2004
- Investigation of flows at low Reynolds number using optical techniques. VKI Lecture Series on Low Reynolds number aerodynamics on aircraft including applications in emerging UAV technology, Rhode Saint Genèse, Belgium, 24.–28.11.2003
- Advanced stereoscopic PIV systems. 3rd Workshop on Particle Image Velocimetry, Lisbon, Portugal, 07.–08.07.2000

Invited seminar lectures international

- From droplets to pandemic – How to prevent SARS-CoV-2 infections via droplets and aerosols. Annual Meeting of the Society for Mathematical Biology (SMB2021), 17.06.2021 (online)
- How to prevent direct and indirect SARS-CoV-2 airborne transmission. San Diego State University, 27.08.2021 (online)
- Coherent flow motions in turbulent boundary layers. Norwegian University of Science and Technology, Trondheim, Norway, 11.10.2019
- On the PIV correlation function. Norwegian University of Science and Technology, Trondheim, Norway, 11.10.2019
- A critical look on some aspects of PIV and PTV. Utah State University, Logan, USA, 04.09.2019
- Coherent flow motions in turbulent boundary layers. Idaho National Laboratory, Idaho Falls, USA, 27.08.2019
- Coherent flow motions in turbulent boundary layers. California Institute of Technology, Pasadena, USA, 13.08.2019
- Coherent flow motions in turbulent boundary layers. San Diego State University, San Diego, USA, 12.08.2019
- Coherent flow motions in turbulent boundary layers. Arizona State University, Phoenix, USA, 09.08.2019

- A new look on coherent flow motions in turbulent boundary layers. Queen's University, Kingston, Canada, 06.09.2018
- A new look on coherent flow motions in turbulent boundary layers. University of Alberta, Edmonton, Canada, 23.08.2018
- A new look on coherent flow motions in turbulent boundary layers. University of Waterloo, Waterloo, Canada, 15.08.2018
- Characterization and interaction of coherent flow structures in turbulent boundary layers. Division of Mechanical Engineering, KAIST, Daejeon, Korea, 16.06.2017
- Large scale structures in turbulent boundary layers and the effect of pressure gradients. University of Southampton, Southampton, UK, 19.08.2015
- Visualization of 3D velocity and temperature fields with micron resolution. Division of Mechanical Engineering, Stanford University, California, USA, 19.11.2014
- Large scale structures in turbulent boundary layers. Division of Mechanical Engineering, University of Berkeley, California, USA, 20.11.2014
- Optical surface pressure measurements – The future for aerodynamic investigations? Lab. for Aerodynamics, Delft University of Technology, The Netherlands, 05.09.2014
- Pressure Sensitive Paint (PSP). Summer School, School of Aeronautical Science and Engineering, Beihang University (BUAA), Beijing, China, 25.08.2013
- Investigation of the base flow dynamics of a transonic rocket. Department of Aeronautics, Xiamen University, Xiamen, China, 21.08.2013
- Investigation of the base flow dynamics of a transonic rocket by means of time-resolved PIV and PSP. Fluid Mechanics Institute, Beijing University (BUAA), Beijing, China, 19.08.2013
- Recent progress on microfluidic measurements and applications. Fluid Mechanics Institute, Beijing University (BUAA), Beijing, China, 19.08.2013
- Near-wall resolution of laminar separation bubbles and turbulent boundary layers. Fluid Mechanics Institute, Beijing University (BUAA), Beijing, China, 17.08.2013
- Laminar separation bubbles and the transition to turbulence. Department of Applied Physics, University of Twente, The Netherlands, 06.03.2012
- On the resolution limit of digital particle image velocimetry. Laboratory for Aero and Hydrodynamics, Delft University of Technology, The Netherlands, 05.03.2012
- Frequency determination with time resolved PIV. European Windtunnel Association (EWA), Rom, Italy, 10.09.2007
- Particle image velocimetry for aerodynamic research. Division of Aeronautics, Harbin Aerodynamic Research Institute (HARI), Harbin, China, 18.10.1999
- Turbulent boundary layer investigations using stereoscopic and multiple plane stereo PIV. Division of Turbulence Research, Beijing University, Beijing, China, 14.10.1999
- Principles of multiple plane stereo PIV. Division of Fluid Mechanics, Beijing University of Aeronautics and Astronautics (BUAA), Beijing, China, 12.10.1999
- Principles of conventional and stereoscopic PIV. Division of Fluid Mechanics, Beijing University of Aeronautics and Astronautics (BUAA), Beijing, China, 11.10.1999
- Multiple plane stereo PIV and its significance for turbulence research. Aero- and Hydrodynamics, Delft University of Technology, The Netherlands, 02.02.1999
- Multiple plane stereo PIV. Division of Mechanical Engineering, University of Berkeley, California, USA, 25.11.1998
- Multiple plane stereo PIV. Division of Mechanical Engineering, Stanford University, California, USA, 24.11.1998
- Multiple plane stereo PIV. University of Illinois at Urbana Champaign, Illinois, USA, 10.09.1998
- Multiple plane stereo PIV. National Aeronautics and Space Administration (NASA) Lewis Research Centre, Cleveland, USA, 08.09.1998
- PIV and its significance for turbulence research. Symposium on Optical Techniques for Flow Diagnosis, Surrey, England, 27.–30.07.1998