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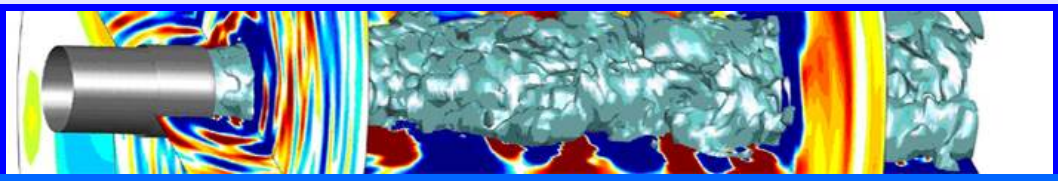
Computational Aeroacoustics, V

TU Graz - Graz, Austria

7-8 September 2026



Computational Aeroacoustics, V (5th Delivery)

TU Graz - Graz, Austria, 7-8 September 2026

Organizers:
Dr Christophe Bogey, LMFA UMR 5509, Ecole Centrale de Lyon, France
Pr Stefan Schoder, Institute of Fundamentals and Theory in Electrical Engineering, TU Graz, Austria

To register: via Ercoftac website

This course is intended for researchers in industry and in academia including Ph.D. Students with a good knowledge in fluid mechanics, who would like to build up or widen their knowledge in the field of aeroacoustics (modelling, computational tools and industrial applications). It will provide a comprehensive overview of aeroacoustic theories (Lighthill analogy and vortex sound theory, FWH analogy, hybrid approaches, wave extrapolation methods, duct acoustics) and of the issues of the direct computation of aerodynamic noise using CFD methods (Large Eddy Simulation, Lattice-Boltzmann Method). A number of practical problems involving the coupling between CFD and CAA will be also thoroughly discussed (e.g. how design a mesh size for aeroacoustics applications, inclusion of mean flow effects via hybrid formulations such as the acoustic perturbation equations, presence of surfaces, aero-acoustic couplings) and realistic applications performed by the instructors (aeronautics, car industry, propulsion, energy) will be discussed. Advanced computational aeroacoustics methods, as well as what we can learn from the direct computation of aerodynamic noise, will also be presented. Finally, specific topics reflecting participant interests will be discussed.

Lecturers

- **Dr Christophe Bogey, Ecole Centrale de Lyon, France, christophe.bogey@ec-lyon.fr**
- **Pr Gwenael Gabard, LAUM, Le Mans Université, France**
- **Dr Alois Sengissen, Airbus Avions, France**
- **Pr Stefan Schoder, TU Graz, Austria, stefan.schoder@tugraz.at**
- **Pr Wolfgang Schröder, Institute of Aerodynamics, Aachen, Germany**

7 September 2026 (Monday)

08:00 – Registration & Coffee
08:30 – Acoustic sources, Lighthill and FWH analogies (S. Schoder)
09:30 – Vortex sound theory (S. Schoder)
10:30 – Refreshments
11:00 – Direct noise computation (C. Bogey)
12:00 – Lunch
14:00 – Examples of direct aerodynamic noise predictions (C. Bogey)
15:00 – Aeroacoustic simulations with unstructured grids (G. Gabard)
16:00 – Refreshments
16:30 – Duct acoustics (G. Gabard)
17:30 – Q&A
18:00 – Close

8 September 2024 (Tuesday)

08:00 – Coffee
08:30 – Hybrid APE/LES Analysis: Part I Theory (W. Schröder)
09:30 – Hybrid APE/LES Analysis: Part II Airframe, Jet, and Combustion Noise (W. Schröder)
10:30 – Refreshments
11:00 – Lattice-Boltzmann Methods for aeroacoustics : theoretical background (A. Sengissen)
12:00 – Lunch
13:30 – Lattice-Boltzmann Methods for aeroacoustics : industrial applications (A. Sengissen)
14:30 – Q&A
15:30 – Close