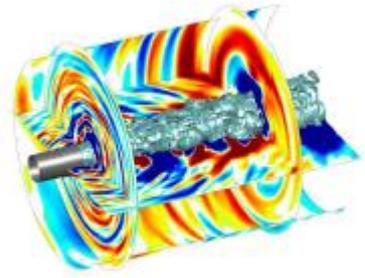




**ERCOFTAC SIG 39**  
**Computational Aeroacoustics, III**  
**2-3 November 2017**  
**ONEA, Paris, France**



Course coordinator: Prof. Christophe Bailly, EC Lyons, France

**Thursday 2<sup>nd</sup> November 2017**

**08:30** – Registration & Coffee

**09:00** – An overview of the numerical simulation of turbulent flows (C. Bailly)

**10:00** – Refreshments

**10:30** – Simple sources and Lighthill's analogy (G. Gabard)

**11:30** – Vortex sound theory (C. Schram)

**12:30** – Lunch

**13:30** – Hybrid APE/LES Analysis: Part I Theory (W. Schröder)

**14:30** – Hybrid APE/LES Analysis: Part II Airframe, Jet, and Combustion Noise (W. Schröder)

**15:30** – Refreshments

**16:00** – Solid surfaces in acoustical analogies (C. Schram)

**17:00** – Q&A

**17:30** – Close

**Friday 3<sup>rd</sup> November 2017**

**08:30** – Coffee

**09:00** – Review of some classical configurations: cavity, cylinder & airfoil (C. Bailly)

**10:00** – Aeroacoustics approaches in the framework of unstructured grids (G. Gabard)

**11:00** – Refreshments

**11:30** – Duct acoustics (G. Gabard)

**12:30** – Lunch

**13:30** – Computational aeroacoustics and Direct Noise Computation (C. Bogey)

**14:30** – Guidelines for accurate simulations and practical applications to jets (C. Bogey)

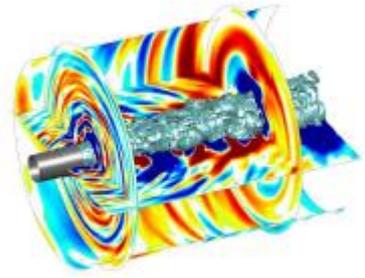
**15:30** – Refreshments

**16:00** – Q&A

**16:30** – Close



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### Aim

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 (modeling, computational tools and industrial applications). It will first provide a comprehensive overview of recent insights of aeroacoustics theories (Lighthill's analogy and vortex sound theory, extensive hybrid approaches and wave extrapolation methods, duct acoustics). A number of practical problems involving the coupling between CFD's results and CAA will be also thoroughly discussed (e.g. how design a mesh size for aeroacoustics applications using large eddy simulation, inclusion of mean flow effects via hybrid formulations such as the acoustic perturbation equations, presence of surfaces, aeroacoustic couplings, ...) and realistic applications performed by the instructors (aeronautics, car industry, propulsion, energy,...) will be discussed. Advanced computational aeroacoustics methods will be also presented as well as what we can learn from the direct computation of aerodynamic noise. Finally, specific topics reflecting participant interests will be discussed in a final round table session.

### Lecturers

- Prof. Christophe Bailly, Ecole Centrale de Lyon, France (Coordinator).
- Dr. Christophe Bogey, Ecole Centrale de Lyon, France.
- Dr. Gwenael Gabard, University of Southampton, England.
- Prof Christopher Schram, Institute von Karman, Belgium.
- Prof. Wolfgang Schröder, Institute of Aerodynamics, Aachen, Germany

Registration of interest: [richard.seoud-ieo@ercoftac.org](mailto:richard.seoud-ieo@ercoftac.org)

**Fees: Members €595, Non-Members €895**

**PhD student Members, 440, Non-Members €595.**

Course fees cover course material, refreshment, lunch, however, accommodation not included.