

Trilateral Russian-French-German Workshop "Computational Experiment in Aeroacoustics"

**September 22-25, 2010
Svetlogorsk, Russia**

A main goal of the seminar is to join efforts of leading researchers in Computational Aeroacoustics from three countries directed to developing of reliable and robust methods of solution of real-life engineering problems in aeroacoustics.

Considering this, a scope of the seminar includes both general problems of the modern computational aeroacoustics and their peculiar aspects related to engineering applications, i.e., to massively-parallel computations, implementation of low-dissipative numerical techniques on unstructured grids, methods of coupling of different parts of complex aeroacoustic computational systems, etc. One more important subject to be discussed at the seminar is a strategy of verification and validation of aeroacoustic numerical approaches which are prerequisites of their successful application in an engineering and design practice.

The main subjects to be discussed at the seminar are:

- high-accuracy and efficient methods in CAA;
- hybrid methods for noise simulation;
- coupling of CAA and CFD techniques;
- applications (jet noise, airframe noise).

Objectives of the seminar

Progress in numerical methods for computational aeroacoustics

The discussion will be focused not only on general numerical aspects of simulation of aerodynamic and acoustic phenomena (convergence, approximation, low-dissipative shock capturing schemes, benchmarking, etc.) but also on the issues of high-performance computing and handling complex geometries and unstructured grids, which are crucial for solving practical engineering problems.

Frontiers of computational aeroacoustics and fluid dynamics

This part of the seminar will be devoted to challenging modeling issues of complex non-linear interactions of turbulence, sound generation and propagation. It will be organized as an open discussion of a wide spectra of the related problems including subgrid models for LES and different approaches to far-field noise prediction. Along with this, specific steps will be discussed

needed for establishing an open-source benchmarking database for the validation of CFD/CAA numerical techniques.

Application of computational aeroacoustics to real-life problems

Here the discussion will be centered on specific requirements to numerical aeroacoustic techniques within compound aeroacoustic models when these techniques are applied to real-life engineering problems such as prediction of the far field jet-exhaust and airframe noise. These include, first of all, validation and evaluation of accuracy and robustness of each of the involved components of the complex aeroacoustic computational systems (adequate turbulence representation, non-reflecting inflow and outflow boundary conditions, acoustic near-field and far-field treatments) and most efficient procedures of their coupling. Examples of successful aeroacoustic computations for engineering applications will be presented and discussed.

Financial conditions (provided by the Russian host side)

For each foreign participant the following expenses will be covered:

- 1) hotel accommodation, breakfast included - 5 nights
- 2) lunches - 4 days
- 3) welcome party and banquet
- 4) excursions
- 5) transfer from/to airport
- 6) seminar kit