Conference session

Simulation of flow-induced noise in subwoofers

Flow-induced noise simulation is a complex and challenging task that involves modeling the interaction between fluid flow and acoustic waves. Some of the main challenges are:

- Capturing the turbulent structures of the flow and their acoustic sources in the flow field requires high-resolution numerical methods and large computational resources.
- Solving the acoustics field in complex geometries and boundary conditions may involve multiple scattering, reflection, and diffraction effects.
- Multiphysics, computationally demanding, and time-dependent simulation is required.

Utilizing techniques like acoustic analogy, hybrid, and direct methods, alongside a unified platform that streamlines complex simulations. It enables simultaneous solutions of diverse physics, simplifies model management, and facilitates understanding of the underlying equations.

Integrating multiple physics into integration speeds up setup, simplifies turbulent model testing, enhances fluid-structure interaction, and reduces computational effort with multicore support. During the presentation, we will investigate how these equations can be combined and support the simulation of such complex phenomena like flow-induced noise.