

## **Collaborative research on jet and cavity flow aeroacoustics: overview and highlights**

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Unsteady flows generate noise with and without interaction with solid boundaries. Common examples include aircraft engine noise (fan noise, combustion noise, jet noise, turbomachinery noise), airframe noise (fuel vent, landing gear, slats, flaps), road vehicle aerodynamic noise (sunroof, door seal, side-view mirror), rail car noise (car gap, wheel housing). Characterizing and suppressing noise generated aerodynamically is a significant challenge, due to the range and complexity of the flow instabilities and the scales separation between the (large) acoustic domain and the (small) size of the aerodynamic sources (e.g. fine-scale turbulence).

This challenge calls for strong synergy and collaboration among research institutions. Some research highlights are presented from collaborative efforts, supported by the European Commission's Marie Curie programme, aimed at characterising and suppressing vehicle aerodynamic noise (the hatchback cavity noise) and aircraft airframe (fuel vent) and turbofan (broadband shock associated) noise components.

The presentation will conclude with new collaborative efforts on modelling car gap noise with the University of Tokyo, presented by Mr Shubhesh Verma.

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