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Simulations of a Jet Impinging on a Flat Plate

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Abstract : In this paper we explore the use of a second-order unstructured-grid, finite-volume code for direct noise prediction. We consider a Mach 1.5 jet impinging on a perpendicular flat plate. Hybrid LES-RANS simulations are used to calculate directly both the flow field and the radiated sound. The ANSYS Fluent commercial code is utilized for the calculations. The acoustic field is obtained directly from the simulations and is compared with the integral approach of Ffowcs Williams-Hawkings (FWH). Results indicate the existence of a preferred radiation angle. The spectrum obtained is in good agreement with observations. This points out to the possibility of handling the effects of complicated geometries on noise radiation by using unstructured second-orders codes.

Keywords : CFD, Ffowcs Williams-Hawkings (FWH), imping jet, ANSYS fluent commercial code, hybrid LES-RANS simulations
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