11th World Congress on Computational Mechanics (WCCM XI)
5th European Conference on Computational Mechanics (ECCM V)
6th European Conference on Computational Fluid Dynamics (ECFD VI)
July 20 - 25, 2014, Barcelona, Spain

CABARET method coupled with acoustic modelling for jet-wing-flap interaction problem

Vasily A. Semiletov and Sergey A. Karabasov

[1] Queen Mary University of London, London, E1 4NS, UK

Key Words: *High-resolution, CFD, Computational Aeroacoustics.*

We present a scalable Monotonically-Integrated Large Eddy Simulation (MILES) method coupled with the integral Ffowcs Williams – Hawkings formulation for far-field noise prediction. The fluid dynamics solver is based on the high-resolution CABARET scheme. The method is first validated for the flow and noise modelling of the canonical NACA0012 airfoil flow problem that corresponds to Re=400000 based on the chord and free-stream Mach number M=0.058. Then the method's capability to capture both near field aerodynamics and far-field aeroacoustics is demonstrated for the acoustic sensitive modelling of flow around dual stream jet with a pylon-wing-flap installation. To quantify the effect of jet-pylon-wing interaction the simulation of isolated jet is performed and comparison with the experimental data is provided.