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Towards efficient simulation of turbulent flows and noise in rotating machines

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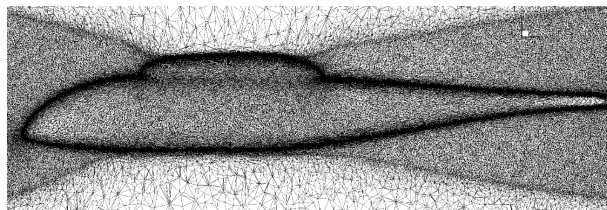
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ABSTRACT

The Norma project aims to the simulation, and then reduction, of noise in existing and future rotating machines in urban areas. Among Norma advances, the proposed communication will cover some physical models and numerical methods (improved LES and DES hybrid models [1], improved RANS approximations of higher accuracy, mesh and analytic methods for rotating geometries) useful for predicting the flow around an helicopter main rotor. ROBIN (Rotor-Body Interaction) fuselage equipped with the scaled Caradonna-Tung two-blade rotor is taken as a model configuration. The immersed boundary method is based on Brinkman penalization functions and building the tetrahedral mesh by moving mesh adaptation to the fuselage surface [2], [3]. The techniques allow keeping the initial mesh topology.



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