

Introduction of the Fluid-Structure Coupling into the Force Analysis Technique

Authors : Océane Grosset, Charles Pézerat, Jean-Hugh Thomas, Frédéric Ablitzer

Abstract : This paper presents a method to take into account the fluid-structure coupling into an inverse method, the Force Analysis Technique (FAT). The FAT method, also called RIFF method (Filtered Windowed Inverse Resolution), allows to identify the force distribution from local vibration field. In order to only identify the external force applied on a structure, it is necessary to quantify the fluid-structure coupling, especially in naval application, where the fluid is heavy. This method can be decomposed in two parts, the first one consists in identifying the fluid-structure coupling and the second one to introduced it in the FAT method to reconstruct the external force. Results of simulations on a plate coupled with a cavity filled with water are presented.

Keywords : aeroacoustics, fluid-structure coupling, inverse methods, naval, turbulent flow

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