



Computational Aeroacoustics for Fan Noise Prediction (Paperback)

By Ed Envia

Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****.An overview of the current state-of-the-art in computational aeroacoustics as applied to fan noise prediction at NASA Glenn is presented. Results from recent modeling efforts using three dimensional inviscid formulations in both frequency and time domains are summarized. In particular, the application of a frequency domain method, called LINFLUX, to the computation of rotor-stator interaction tone noise is reviewed and the influence of the background inviscid flow on the acoustic results is analyzed. It has been shown that the noise levels are very sensitive to the gradients of the mean flow near the surface and that the correct computation of these gradients for highly loaded airfoils is especially problematic using an inviscid formulation. The ongoing development of a finite difference time marching code that is based on a sixth order compact scheme is also reviewed. Preliminary results from the nonlinear computation of a gust-airfoil interaction model problem demonstrate the fidelity and accuracy of this approach. Spatial and temporal features of the code as well as its multi-block nature are discussed. Finally, latest results from an ongoing effort in the area of arbitrarily high...

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