



Sonic Boom Minimization

By Rallabhandi, Sriram

Condition: New. Publisher/Verlag: AV Akademikerverlag | through Shape Optimization and Acoustic Propagation - Aircraft Design for Sonic Boom Minimization | Revision with unchanged content. Sonic boom annoyance is an important technical showstopper for commercial supersonic aircraft operations. Choosing the right aircraft shape reflecting the design requirements is a crucial step that is usually simplified in the early stages of design by resorting to a qualitative selection of a baseline configuration based on historical designs and designer's bias. The shortcomings of traditional tools are overcome in this study. A diverse mix of tools is integrated to provide a simple, yet powerful procedure for sonic boom minimization. A shape optimization procedure for supersonic aircraft design using better geometry generation and improved tools is demonstrated. Varying atmospheric conditions could have a huge impact on the sonic boom annoyance metrics and a quick way of obtaining probability estimates of relevant metrics is demonstrated. Theoretical sonic boom minimization equations are generalized; relevant equations are derived to yield increased flexibility in aircraft design process. The unique shape optimization procedure in conjunction with parallel genetic algorithms improves the computational time of the analysis and allows quick exploration of the vast design space. | Format: Paperback | Language/Sprache:...



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