

Low Drag and Sonic Boom Aerodynamic Layout Design Technique Study for a Supersonic Business Jet

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Aiming at the aerodynamic layout design of the next generation civil aircraft, this paper starts from the aircraft mission positioning and demand analysis, and carries out the overall aerodynamic design technology research for an supersonic business jet. by using parameterization modeling method and grid automation, coupled with the traditional aerodynamic characteristics analysis and sonic boom numerical simulation analysis tools, the automatic optimization design process is built and the aircraft's wide-speed domain multi-objective collaborative aerodynamic design optimization is completed. The numerical analysis results show that the design result has good aerodynamic characteristics in wide-speed domain; At supersonic cruise condition, the peak value and shape of ground overpressure distribution are effectively controlled.

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