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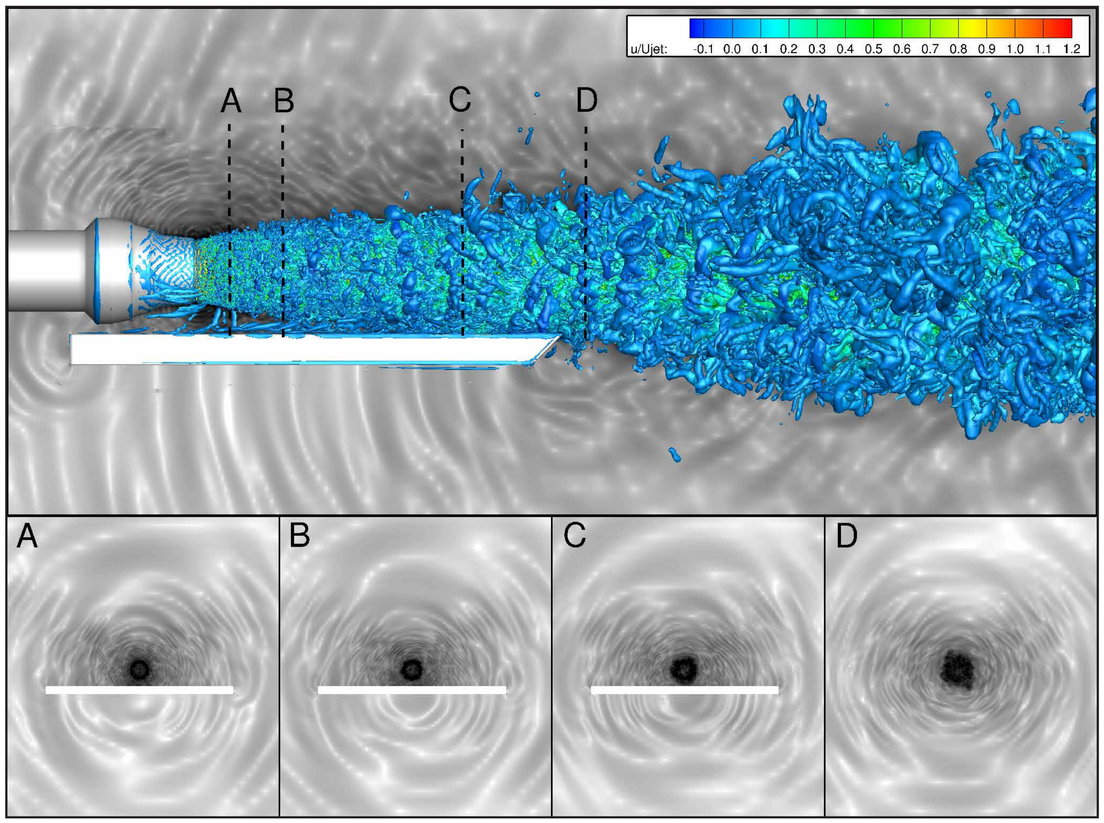

Isocontour of Q-criterion on NASA's Low-Boom Flight Demonstrator colored by normalized streamwise velocity (blue) and density gradient magnitude (greyscale) of a jet interacting with a plate-surface representing airframe interaction noise. Labels A through D represent cross-streamwise planes at different axial locations. *Gerrit-Daniel Stich, Jeffrey Housman, NASA/Ames*

Illustration of NASA's planned Low-Boom Flight Demonstration aircraft. The close proximity of the tail cone surfaces and jet motivated the work of jet surface interaction noise prediction (for example, jet scrubbing noise) with the use of hybrid Reynolds-averaged Navier Stokes/Large-Eddy Simulation methods. *NASA, Lockheed Martin*

National Aeronautics and Space Administration

Predicting Jet Noise for Full-Scale Low-Boom Aircraft

Supersonic vehicle research addresses the development of tools, technologies, and knowledge to help eliminate technical barriers to practical commercial supersonic flight. While the major focus of this research has been on reducing the ground signature at supersonic cruise, airplanes must also satisfy noise constraints during takeoff and landing at subsonic speeds, and jet noise is the main sound source. We use computational aeroacoustic simulation tools to assess new designs at these lower speeds. We are further scrutinizing both modeling and simulation practices and the use of hybrid Reynolds-averaged Navier Stokes/Large-Eddy Simulations methods and developing new methods to predict jet noise on a full flight configuration.

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