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Piv Measurements of Supersonic Internally-Mixed Dual-Stream Jets

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 32 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. While externally mixed, or separate flow, nozzle systems are most common in high bypass-ratio aircraft, they are not as attractive for use in lower bypass-ratio systems and on aircraft that will fly supersonically. The noise of such propulsion systems is also dominated by jet noise, making the study and noise reduction of these exhaust systems very important, both for military aircraft and future civilian supersonic aircraft. This paper presents particle image velocimetry of internally mixed nozzle with different area ratios between core and bypass, and nozzles that are ideally expanded and convergent. Such configurations independently control the geometry of the internal mixing layer and of the external shock structure. These allow exploration of the impact of shocks on the turbulent mixing layers, the impact of bypass ratio on broadband shock noise and mixing noise, and the impact of temperature on the turbulent flow field. At the 2009 AIAACEAS Aeroacoustics Conference the authors presented data and analysis from a series of tests that looked at the acoustics of supersonic jets from internally mixed nozzles. In that paper the broadband shock and mixing...



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