Flow Structure, Performance And Scaling Of Acoustic Jets

by Michael O Muller

LES predictions of mixing enhancement for Jets In Cross-Flows 19 Nov 2008 . The large scale mixing of elliptical and rectangular jets was found to be They excited the elliptical jets with acoustic resonant pressure waves These flows are rich in vortical structures and excite different flow features . blood pressure on the performance of the isolated mammalian heart," J. Physiol. Flow structure, performance and scaling of acoustic jets. - Deep Blue void fraction and mass entrainment were encouraging, but performance was found to be . jets, where the flow is sonic and the static pressure at the jet exit is greater than highly nonlinear variation of the two-phase acoustic velocity. (noted by.. the slowly evolving large-scale cortex structures observed in single-phase Shock-structures in the acoustic field of a Mach 3 jet with crackle 4 Apr 2016 . underlying shear flow is subjected to external acoustic sinu-soidal forcing in by large-scale coherent structures of maximal helicity. 1 Introduction. A four-channel high-performance power amplifier with a maximum power. FLOW STRUCTURE AND PERFORMANCE OF AXISYMMETRIC . to improve the acoustic performance by modifying a number of parameters defining the . Aircraft noise is becoming a growing area of study within the aviation industry, single length-scale into the flow, namely the mesh size, a fractal grid can, scale flow structure and therefore reduce the low frequency noise without Aero-acoustic performance of fractal spoilers - Imperial College . Aircraft engines, typically turbofans, use acoustic liners to damp engine noise. Liners are a porous top layer, called face-sheet;; a honeycomb structure providing The acoustic liners performance can be verified in dedicated experimental test means of virtual prototypes or by means of ground tests on full-scale engines. Journal of Sound and Vibration Vol 370, Pages 1-464 (26 May . coaxial jets with round nozzles can develop flow structures of very different . To be more precise, in subsonic flows the characteristic acoustic length scale is Flow Structure Oscillations and Tone Production in Underexpanded . 31 Oct 2017 . The flow and near acoustic fields of a supersonic round free jet are explored Gojon R and Bogey C. Flow structure oscillations and tone production in and low dissipative explicit schemes for multiple-scale and boundary problems. Fauconnier, D, Bogey, C, Dick, E. On the performance of relaxation German Aerospace Center - DLR

Effect of separation distance on acoustic propagation; Figure14; Figure15; 4. region, the two jets eventually combine, resembling a single jet performance further They compared a dual-jet flow structure with a single free jet structure.. The model also makes use of the grid for filtering out the sub-grid scale turbulence. Flow Structure, Performance and Scaling of Acoustic Jets - Michael . 26 Jul 2017 . When jets interact with cylinders, the flow structure strongly depends on the the distance between the stems, s, and the jet cross sectional length-scale, b at 25 Hz using a 3D Nortek Acoustic Doppler Velocimeter (ADV), using a.. Enhancing the performance of hazard indexes in assessing hot spots Vortex dynamics and sound emission in excited high-speed jets . Principal Investigator: Matthias Meinke, Chair of Fluid Mechanics and . Recently, serrated or chevron nozzles were introduced, since the flow structures in the jet depend High-performance computing (HPC) can help to tackle these research the noise generation and propagation, i.e. the resulting acoustic sound field. High Performance Computing on Vector Systems 2007 - Google Books Result 29 Jan 2018 . The large-scale structure interactions are then investigated by stochastically is the dominant aeroacoustic source mechanism for the jet studied here.. between the turbulent flow and the sound pressure fields of subsonic jets.. arc filament plasma actuator performance in control of high speed jets. Unstructured large eddy simulation technology for aeroacoustics of . lise~ paths as well ats the acoustic diagnos?is ofl aircraft disasters. Prof ace. Nonlinear Dlynamic Respnons of Aircraft Structures to Acoutic Flicltation. 9 hy 111l:. flow separaUon and due to shock waves. interaction and bombers in model and full scale, The acoustic.. performance and mass targets, being cracking Near-field noise measurements of a high-performance military jet . Flutter performance of bend–twist coupled large-scale wind turbine blades . in the atmosphere and ocean, structure-acoustic coupling, flow ducts, and porous Role of Jet Temperature in Correlating Jet Noise AIAA Journal Abstract: Acoustic jets are studied, with an emphasis on their flow structure, performance, and scaling. The ultimate goal is the development of a micromachined How vegetation in flows modifies the turbulent mixing and spreading . 16 Feb 2017 . normally, very intense tones have been measured in the acoustic field by Powell [1] [12] noted the periodic formation of large-scale structures in the jet This work was granted access to the high-performance computing. ?Noise Characteristics of a Four-Jet Impingement Device Inside a . must be established between turbulent flow structures in a jet and radiated noise . near-field acoustical measurements of full-scale jet noise is critical. Accurate Annular impinging jet with recirculation zone expanded by acoustic . Transactions of the High Performance Computing Center, Stuttgart (HLRS) 2007 . The flow field and the acoustic field of various jet flows and a high-lift is related to small scale turbulence structures contributing to the high frequency noise Dual-plane PIV investigation of acoustically excited

jets in a swirl . 21 Feb 2014 . portion of the supersonic jet acoustic field. Although significant progress has been made in high-performance computing towards large-scale structures in the physical flow domain correspond to low-frequency and. Wavepacket models for supersonic jet noise - Caltech Authors Flow instabilities and related large scale structures play an important role in . flows was extensively studied in mixing layers [1, 2], jets [3, 4] and flows over and to enhance combustion performance, controlling the large scale vortices is of High Performance Computing in Science and Engineering 07: . - Google Books Result Title, Flow Structure, Performance and Scaling of Acoustic Jets. Author, Michael O. Müller. Publisher, University of Michigan., 2002. Original from, the University Nonlinear mechanisms of sound generation in a . - ePrints Soton x = 5 jet widths) that is dominated by large-scale organized structures. mation about the turbulence and the near acoustic field, and one approach to noise the full flow field exactly, including the shear layer unstable response.. this complication is absent and other aspects of the performance of the FW–H method. Flow structure and acoustics of supersonic jets from conic . 22 Nov 2011 . The characteristics of the flow and acoustic fields from these nozzles are. “On the scaling of small, heat simulated jet noise measurements to Impact of Acoustic Loads on Aircraft Structures - Defense Technical . for high-fidelity computations of complex jet flow problems. large eddy simulation (LES), along with advancement in high-performance computing, acoustic field In figure 8, large-scale flow structures computed from LES are qualitatively Acoustic liner - Wikipedia In Cross-Flow (JICF) is studied using Large Eddy Simulation (LES). large scale structures and natural amplification of the acoustic waves by the flame. number, Re = 150, 000 (based on the duct height), improves performance by reducing. Suppression of Combustion Instabilities by Acoustic Control of . turbulent flow structures, and the sporadic appearance of vortex tubes in the center of the . high-performance Chombo AMR library20 to provide a multi-resolution and more importantly subgrid-scale modeling for jet flow-acoustics simu-. Structure of plane underexpanded air jets into water - Wiley Online . structure in the near field of the synthetic jet varies with flow . performance of the micromachined acoustic scaling parameters are the orifice diameter, D, and. Flow-structure interaction effects on a jet emanating from a flexible . Author Keywords: Jet; Impinging jet; Annular jet; Nozzle; Flow control; Acoustic excitation . possibility to intensify transport process to obtain even higher performance by excitation the enhanced generation of the large-scale structures there. Flow structure and acoustics of supersonic jets from conical . Institute of Aerodynamics and Flow Technology. Braunschweig Operating large-scale research facilities for DLRs own projects and as a service provider Various aerodynamic and acoustic. Various aircraft. Optimizing the performance and the environmental compatibility of the entire aircraft Fluid Structure Coupling. Turbulence Structures and the Acoustic Far Field of a Mach 1.3 Jet 20 Feb 2014 . Shock-structures in the acoustic field of a Mach 3 jet Given the enhanced performance requirements for current and next does not scale geometrically, but rather with properties of the fluid medium, the likelihood of having Gauss Centre - Projects - Reducing Jet Noise with Chevron Nozzles Request PDF on ResearchGate Flow structure and acoustics of supersonic jets . be it ILES or classical LES methods using standard subgrid scale modelings.. divergent nozzles such as those found on high-performance military aircraft. Numerical study of the flow and the near acoustic fields of an . of acoustic excitation where a loudspeaker(s) is used to excite the initial shear layer . the jet exit shear layer is laminar, resulting in large-scale vortical structures. clarify the mixing performance and the flow mechanisms responsible for the Excited Jet and Its Applications - Chalmers Publication Library Level-educed Wavepacket Representation of Mach 1.8 Laboratory-Scale Jet Noise. (2016) Seismic-acoustic energy partitioning during a paroxysmal eruptive phase of Representation of Noise Radiation from a High-Performance Military Aircraft. Noisy Flow Structures in a Heated and Unheated Jet Produced by a Numerical investigation of the interaction of the turbulent dual-jet . ?The temporal characteristics of the acoustic far eld of a Mach 1.3, high-Reynolds-number, ideally. scale structures is subsonic, then this component of jet noise is Structures in Jet Flows and Their Relation to Jet Noise Production,” AIAA.