

Supersonics

Papers Presented at the AIAA Aviation Forum 2025 and
ASCEND 2025

Las Vegas, Nevada, USA
21-25 July 2025

ISBN: 979-8-3313-2807-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

The contents of this work are copyrighted and additional reproduction in whole or in part are expressly prohibited without the prior written permission of the Publisher or copyright holder. The resale of the entire proceeding as received from CURRAN is permitted.

For reprint permission, please contact AIAA's Business Manager, Technical Papers. Contact by phone at 703-264-7500; fax at 703-264-7551 or by mail at 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191, USA.

TABLE OF CONTENTS

High Speed Commercial Vehicle (HSCV) Technology Identification and Screening	1
<i>Adam Cox, Dimitri Mavris</i>	
NASA High Speed Commercial Vehicle (HSCV) Propulsion System and NPSS Model Development	14
<i>Russell Denney, Daniel Moore, Jimmy C. Tai</i>	
The Impact of Injected Fluid Properties on Supersonic Flow	26
<i>Tejaswini Gautham-Pogioli, Shivank Sharma, Michael Ullman, Ral Bielawski, Venkat Raman</i>	
A Hybrid Method for Dynamic Thermal Simulation in Aircraft Compartments from Ground Operations to Supersonic Flight	44
<i>Can Kumartaslioglu, Ibrahim B. Kucukcay, Gorkem Atay</i>	
Trajectory Optimization for Boom-Minimizing Supersonic Transport Over the Continental U.S.	62
<i>Clayton Gao, Dengfeng Sun</i>	
Near-To-Mid Field Sonic Boom Simulation Using a Space Marching Method with Atmospheric Stratification	75
<i>Rei Yamashita, Hisato Takeda, Hiroaki Ishikawa</i>	
Supersonic Projectile Flow Field Reconstruction Using Background Oriented Schlieren and Physics Informed Convolutional Neural Networks	86
<i>Miguel A. Escudero, Benoît G. Marinus, Karthik Depuru-Mohan, Marco Debiasi, Alistair J. Saddington</i>	
Multi-Fidelity Conceptual Design and Optimization of Low Boom Supersonic Transport Aircraft.....	104
<i>Dean Ryan-Simmons, Ramesh K. Agarwal</i>	
Conceptual Design of Supersonic Transport Configurations.....	141
<i>Lukas Weber, Pascal Bertram, Tobias Dietl, Samuel Schnell, Martin Plohr, Bernd Liebhardt</i>	
Multi-Fidelity Aerodynamic Data Set Generation and Analysis of the FSTB-L Supersonic Business Jet	156
<i>Samuel Schnell, Alexander Tidow, Jochen Kirz</i>	
Flight Physics Analysis for the FSTB-L Supersonic Business Jet.....	175
<i>Falk Sachs, Carsten Christmann, Samuel Schnell, Daniel Kiehn, Robin Hähnel</i>	
CFD-Based Design of a Supersonic Business Jet for Low Environmental Impacts Including Trim and Stability Constraints.....	193
<i>Jochen Kirz, Samuel Schnell, Michel Noeding</i>	
Supersonic Flight Routing in Consideration of Secondary Sonic Booms	210
<i>Bernd Liebhardt</i>	

Author Index