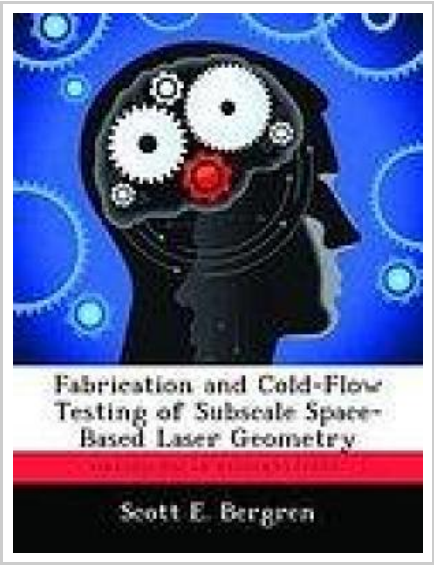


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Fabrication and Cold-Flow Testing of Subscale Space-Based Laser Geometry

By Scott E. Bergren

Bibliioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x6 mm. This item is printed on demand - Print on Demand Neuware - The objectives of this research were to build a facility that could simulate the expected fluid flow properties in the conceptual Space Based Laser Integrated Flight Experiment (SBL IFX) gas dynamic laser using cold-flow, and to investigate the performance of the model. A 1/5-scale model of one quadrant of the SBL IFX cylindrical, gas dynamic laser was fabricated and mated to a blow-down/vacuum combination wind tunnel. The primary components of the test apparatus consisted of a nozzle array, optical cavity, supersonic diffuser, centerbody, and transition. The throat height of a single nozzle was 1 mm and the expansion ratio was two. The transition structure was designed to attach the subscale model to the wind tunnel facility vacuum line and was not part of the SBL IFX design. Using rapid data acquisition and schlieren photography, the fluid velocities in the diffuser where determined to became subsonic after a transient time interval of 0.2 seconds from wind tunnel startup for a 30 second long test. During this transient time interval, a well-defined, attached oblique shock wave was observed off the...

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