



Shock Tubes

Ji Hyung Yoo



Shock Tubes:

Shock Tubes and Waves Charles E. Treanor, J. Gordon Hall, United States. Air Force. Office of Scientific Research, 1982-01-01 Proceedings from a symposium on shock tubes and waves held July 6-9 1981 **Shock Tubes** John Keith Wright, 1961 **Shock Tubes** Irving Israel Glass, 1970-12-15 This volume contains the proceedings of a symposium held at the University of Toronto in June 1969 The symposium consisted of six sessions each containing an invited paper followed by six contributed papers reporting on recent relevant research and development The topics are a review of research problems in basic shock tube flows and the possibilities for the shock tube in the future driving techniques explosive drivers theoretical and experimental research in electromagnetic shock tubes chemical kinetics and spectroscopy and a review of shock tube diagnostics instrumentation and fundamental data as well as the measurement of physical quantities

Shock Tubes I. I. Glass, 1970 *Shock Tubes and Waves* Charles E. Treanor, J. Gordon Hall, 1982-06-30 Sponsored by the U S Air Force Office of Scientific Research this conference was held in Niagara Falls on July 6-9 1981 This book includes material on the following topics instrumentation and diagnostics shock tube facilities and techniques gas dynamic experiments heat transfer and real gas effects boundary layers shock structure shock propagation laser and spectral optical studies chem and kinetics relaxation and excitation ionization dusty gases two phase flow and condensation shock waves in the environment and energy and energy related processes The book contains a total of 98 papers by well known specialists

Springer Handbook of Experimental Fluid Mechanics Cameron Tropea, Alexander L. Yarin, John F. Foss, 2007-10-09 Accompanying DVD ROM contains all chapters of the Springer Handbook Page 3 of cover Test Time in Low Pressure Shock Tubes Aerospace Corporation, 1962 Evaluation of an Electromagnetic Shock Tube for Generating Strong Shocks in Air James F. Roach, 1963 **Plasma Physics**, 1971-02-27 Plasma Physics **Strategies for Planar Laser-induced Fluorescence Thermometry in Shock Tube Flows** Ji Hyung Yoo, 2011 This thesis was motivated by the need to better understand the temperature distribution in shock tube flows especially in the near wall flow regions Two main ideas in planar laser induced fluorescence PLIF diagnostics are explored in this thesis The first topic is the development of a single shot PLIF diagnostic technique for quantitative temperature distribution measurement in shock tube flow fields PLIF is a non intrusive laser based diagnostic technique capable of instantaneously imaging key flow features such as temperature pressure density and species concentration by measuring fluorescence signal intensity from laser excited tracer species This study performed a comprehensive comparison of fluorescence tracers and excitation wavelengths to determine the optimal combination for PLIF imaging in shock tube flow applications Excitation of toluene at 248nm wavelength was determined to be the optimal strategy due to the resulting high temperature sensitivity and fluorescence signal level compared to other ketone and aromatic tracers at other excitation wavelengths Sub atmospheric toluene fluorescence yield data was measured to augment the existing photophysical data necessary for this diagnostic technique In addition a new imaging test section was built to

allow PLIF imaging in all regions of the shock tube test section including immediately adjacent to the side and end walls The signal to noise SNR and spatial resolution of the PLIF images were optimized using statistical analysis Temperature field measurements were made with the PLIF diagnostic technique across normal incident and reflected shocks in the shock tube core flow The resulting images show uniform spatial distribution and good agreement with conditions calculated from the normal shock jump equations Temperature measurement uncertainty is about 3.6% at 800K The diagnostic was also applied to image flow over a wedge The resulting images capture all the flow features predicted by numerical simulations The second topic is the development of a quantitative near wall diagnostic using tracer based PLIF imaging Side wall thermal boundary layers and end wall thermal layers are imaged to study the temperature distribution present under constant pressure conditions The diagnostic technique validated in the shock tube core flow region was further optimized to improve near wall image quality The optimization process considered various wall materials laser sheet orientations camera collection angles and optical components to find the configuration that provides the best images The resulting images have increased resolution 15 μm and are able to resolve very thin non uniform near wall temperature layers down to 60 μm from the surface The temperature field and thickness measurements of near wall shock tube flows under various shock conditions and test gases showed good agreement with boundary layer theory To conclude this thesis new applications and future improvements to the developed PLIF diagnostic technique are discussed These suggested refinements can provide an even more robust and versatile PLIF imaging technique capable of measuring a wider range of flow conditions near walls

ASTIA Subject Headings Defense Documentation Center (U.S.),1959 **Shock Waves and Shock Tubes** International Symposium on Shock Waves and Shock tubes (Berkeley, Calif.),1986 **Handbook of Shock Waves, Three Volume Set** Gabi Ben-Dor,Ozer Igra,Tov Elperin,2000-10-18 The Handbook of Shock Waves contains a comprehensive structured coverage of research topics related to shock wave phenomena including shock waves in gases liquids solids and space Shock waves represent an extremely important physical phenomena which appears to be of special practical importance in three major fields compressible flow aerodynamics materials science and astrophysics Shock waves comprise a phenomenon that occurs when pressure builds to force a reaction i.e. sonic boom that occurs when a jet breaks the speed of sound This Handbook contains experimental theoretical and numerical results which never before appeared under one cover the first handbook of its kind The Handbook of Shock Waves is intended for researchers and engineers active in shock wave related fields Additionally R D establishments applied science research laboratories and scientific and engineering libraries both in universities and government institutions As well as undergraduate and graduate students in fluid mechanics gas dynamics and physics Key Features Ben Dor is known as one of the founders of the field of shock waves Covers a broad spectrum of shock wave research topics Provides a comprehensive description of various shock wave related subjects First handbook ever to include under one separate cover experimental theoretical and numerical results **Shock Tubes and Waves** R.

Douglas Archer, Brian E. Milton, 1983 **Shock Waves @ Marseille I** Raymond Brun, Lucien Z. Dumitrescu, 2012-12-06

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Supersonic Aerodynamics I. I. Glass, J. Gordon Hall, 1959 DDC Retrieval and Indexing Terminology Defense Documentation Center (U.S.), 1975 **Scientific and Technical Aerospace Reports** , 1988 *Technical Abstract Bulletin*

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the lycoming o 320 is a large family of naturally aspirated air cooled four cylinder direct drive engines produced by lycoming engines they are commonly used on light aircraft such as the cessna 172 and piper cherokee different variants are rated for 150 or 160 horsepower 112 or 119 kilowatts as implied by the engine s name its cylinders are arranged in horizontally opposed configuration

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