

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems (4)

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THE CONCEPTUAL SCHEME BASED ON AIR-BREATHING PROPULSION REUSABLE SPACE
TRANSPORTATION SYSTEM

Abstract

The aerospace transportation system is a main implement for human to access, reentry, exploit and utilize the space, and development of a new generation space transportation system which is cheap, reliable, convenient and reusable has been pursued by mankind for long time. A new concept of single stage to orbit (SSTO) reusable space transportation system(RSTS) based on air-breathing propulsion and using Sliding takeoff technology with assist device is proposed in this paper. Key breakthroughs required in aerodynamic, propulsion, airframe, GNC, multidisciplinary optimization global optimization to increase lift and reduce drag and so on are proposed and analyzed. Researches show that the scheme discussed in the paper has obvious advantages in reuse, delivery efficiency, operating costs, flight safety and reliability, and thus it is an important direction of future space transportation system.