

SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND  
DEVELOPMENT (D3)

Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and  
Development (1)

Author: Dr. Jun-Mao Yin  
Beijing Special Machinery Institute, China, junmaoy@163.com

Prof. Zhi-yong Zeng  
China, zengzy@126.com

Mr. Jun Liu  
Beijing Special Machinery Institute, China, liujun\_paper@163.com

ADAPTABILITY ANALYSIS ON MAGLEV LAUNCH ASSIST FOR LAUNCHING SPACE VEHICLES

**Abstract**

The horizontal propulsion is viewed as a promising application for reusable launching space vehicles, which could assist the vehicle to reach designated takeoff speed at certain attitude, achieving higher cost-effectiveness via reducing the gross weight of the vehicle. Benefiting from sustaining all loads and eliminating friction during the propulsion process on ground, Meglev launch assist becomes one prospective method for launch of space vehicle. The main objective of this paper is to review the blueprints of Maglev propulsion space launch from the point of system composition, with related key technologies investigated and analyzed. The adaptability with current technical level were contrasted and analyzed with demand of launching space vehicles, coming out with feasible implementation schemes. Based on recent progress in Meglev propulsion, major problems and design constraints of Meglev launch assist for launch of space vehicles were indicated. With current rapid development of technology, such as high temperature superconducting magnetic, it indicates that massive suspend gap, low-power dissipation and passive self-adaption stability might be the major characteristics of Meglev launch assist for launch of space vehicles.