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DEVELOPMENT (D3)

Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Systems (2A)

Author: Dr. Ding Zhou

Aerospace System Engineering Shanghai, China, China, zhou ding0113@163.com

Mr. Yanqian Liang

Aerospace System Engineering Shanghai, China, China, liangyanqian@sast.cn

Mr. Jianfeng Lin

Aerospace System Engineering Shanghai, China, China, bowwilliam@yeah.net

PRINCIPLE OF IN-ORBIT OPERATION AND PROSPECTIVE APPLICATIONS FOR FUTURE  
ANNULAR SPACE SYSTEM**Abstract**

Considering for further space development and exploitation as well as exploration for novel space infrastructure, the concept of building annular space system in earth orbit is proposed based on the conceptual connotation of Dyson Sphere and Orbital Ring System in this paper, human activities would be thoroughly extended with this ring space system. First, the elementary conception and system components are presented along with visually overall blueprint. Then the system stability is investigated and analyzed in dynamics and structural mechanics, several control schemes for stabilization are raised in principle consequently, such as kinetic energy mass, electricity kinetics, high energy propulsion and solar sail etc. Finally, for perspective applications, the annular space system will play a significant role in the extension and upgrade of human activities such as energy and power acquisition, space transportation, on-orbit manufacturing and communication, supporting the expansion of civilization into interstellar space.