

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)

Human and Robotic Partnerships in Exploration - Joint session of the Human Spaceflight and Exploration Symposia (6-A5.3)

Author: Prof. chuanfeng wei

Institute of Manned Space System Engineering, China Academy of Space Technology (CAST), China,
chfwei@163.com

RESEARCH ON BRAIN-ACTUATED ROBOTIC IN HUMAN SPACEFLIGHT ENDEAVORS

Abstract

Astronauts' EVA work plays an important role in the construction and operation process of space station. Improving the astronauts' working ability and human-machine cooperation, and reducing the risk and cost is the key goal for EVA. Generally, two astronauts wearing EVA spacesuit will participate in a typical EVA mission to conduct specific task under the support of robotic arms. However, due to the constrain of spacesuit structure, the area and flexibility is limited, and each EVA is expected to be completed within 7 hours. Brain-actuated robotic arm could reduce the command control loop, and shorten the EVA duration. Through brain-computer interface, the astronauts' work ability can be improved. The cooperation between human and machine can improve the space station's efficiency and also reduce the risk and cost. In this paper, I will introduce the Brain-computer practice in Tiangong-2 space-lab and give the thinking for future human spaceflight endeavors.