19TH IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (A5)
Human Exploration of the Moon and Cislunar Space (1)

Author: Mr. Vladislav Sychkov
SPA "Android Technics", Russian Federation, vlad.sychkov@rusandroid.com

Mr. Aleksey Bogdanov
OJSC "SPA "Android Technics", Russian Federation, bogdanov@npo-at.com
Dr. Oleg Saprykin
TSNIIMASH, Russian Federation, oleg.sapr@gmail.com
Mr. Aleksandr Grebenshikov
Central Research Institute for Machine Building (JSC TSNIIMASH), Russian Federation,
cosmorobot@list.ru

ANTHROPOMORPHIC ROBOTICS APPLYING IN ON-PLANET ACTIVITY AND MOON AND MARS EXPLORATION PROSPECTS

Abstract

There is a rational work allocation between automatic systems and a man at the heart of on-planet bases and settlements functioning. Considerable volume of research, repair, search-and-rescue works in extremely unfavourable conditions requires human participation. Modern anthropomorphic robots physically replacing a man allow to conduct activities in this field successfully. Similar to human characteristics kinematics and power indexes combination with remote control possibility by operator allows to conduct these activities with high professionalism. Research and experimental works on anthropomorphic robot development for operation in space are presented in the robotic system SAR-401. Copying control system is supplemented by a torque feedback system in this model. It allows an operator to control SAR-401 links and external objects force interaction. Copying set-up device new version is developed with regard to the prevent models use experience. Reduced-weight ergonomic construction was tested in Yu.A. Gagarin Research and Test Cosmonaut Training Center. Results of operator and copying set-up device interaction research will be represented in the report. Developed hardware-software station interior emulation complex, its interaction with anthropomorphic robot 3-D model will be demonstrated. Applying opportunities for cosmonauts training and preliminary estimate of developing device and environment functionality analysis will be represented.