

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Ignition - Primary Space Education (1)

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AMATEUR RADIO ON ISS – NEXT GENERATION HAM TV SYSTEM

Abstract

Amateur Radio on the International Space Station (ARISS) lets students worldwide experience the excitement of talking directly with crew members of the International Space Station, inspiring them to pursue interests in careers in science, technology, engineering and math as well as arts (STEAM) and engaging them with radio science technology through amateur radio.

Since the launch of the International Space Station, different types of commercial amateur radio transceivers have been modified and adopted to human space flight safety recommendations. Antennas outside of the ISS have been used for the communication to ground. The latest change was the addition of an HAM Video system for live video DVB-S transmissions to ground. The next improvement will consist of a new KENWOOD D-710 radio gear and a new multi-use power supply.

This paper describes the modernized amateur radio equipment inside of the ISS COLUMBUS module and its combination possibilities. The equipment and its combinations offer potential services for educational use within the STEAM programs but also for technical experiments. The range of potential new experiments goes from simple data transmission experiments over voice communication to more complex video voice transmission as accompanied by assistance of ISS crew from the COLUMBUS module. The field of applications ranges from robotics to earth exploration. This allows pupils from lower classes until students from university to make use of the experiments and to involve them into educational programs.

ARISS (Amateur Radio on ISS) is a world-wide volunteer working group using amateur radio frequencies to enable contacts between schools and crew members on the International Space Station. This service is offered in close long time cooperation with the space agencies. In addition, ARISS is developing hardware, manages and organizes its use for educational purposes on the ISS. ARISS volunteer teams are creating and supporting educational projects for schools and youth groups but also “longlife learning” by using the different ARISS services.