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Commercial Human Spaceflight Programs (2)

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THE EXPERIMENT AND SCIENCE PROGRAM FOR THE "ASTRONAUTIN" COMMERCIAL HUMAN SPACEFLIGHT MISSION

Abstract

The primary aim of the initiative "Astronautin" is to fly the first female German astronaut to the International Space Station (ISS) in 2020. It intends to demonstrate that a private European company can initiate and carry out a scientifically oriented human-spaceflight mission in as a commercial undertaking.. It is of utmost importance that the selected Astronautin should serve as a role model engaging with young people, especially young women, and promoting STEM (Science, Technology, Engineering and Maths) professions. The intention is to carry out scientific experiments, or any other commercialized (sponsored/incentivized) activities, onboard the ISS. The Astronautin mission is a privately funded program, which will be financed through strategic partners, sponsors, crowdfunding, crowdsourcing and donations. A major supporter of the project is Airbus Defense and Space with significant in-kind contribution. An experiment and science program supported through a crowdsourcing campaign is currently underway, in cooperation with the innovation company HYVE. This campaign shall also identify additional finance models that could be used for the Astronautin project. For the Astronautin mission a microgravity experiment and science program will be established. Physiological data of female astronauts are currently limited in Germany. Therefore, intended experiments shall aim to encompass all aspects of female physiology. The influence of gravity on the body structures such as bones, muscles, cardio vascular system, brain, etc. shall be investigated using instruments and equipment partly available on the ISS, and partly provided by interested scientists and industry. Furthermore, the effects of radiation on the female body and of self-healing as well as the dynamics of team composition on longer duration exploration missions is of particular interest. This privately organized mission shall provide a platform for industry driven research by simplifying the process ISS utilization. Subsequent mission ambitions are educational, such as to stimulate the young generation by making mission results available, e.g. by encouraging and facilitating student experiments. This will aid in stimulating the interest of young people

for space and space research and inspire young female students for careers in space industry and other technical professions. This paper will present an overview of the progress and status of the Astronautin initiative, with special emphasis on the experimental and scientific program.