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CHALLENGES OF FUTURE HUMAN SPACE EXPLORATION - RETHINKING WHAT IS POSSIBLE

Abstract

More than 40 years have passed since man first stepped on a planetary body other than earth. Yet, we have not proceeded passed the moon in our human space exploration endeavors. There are many reasons for this stagnation in human space exploration expansion. Budgetary cuts have definitely been an important contributor to this. Moreover, society seems not to understand the need for such efforts. However, money and societal support are not the only reasons why we have not progressed in this area. The harsh environment of space means that longer duration space flight can lead to drastic physiological and psychological problems for astronauts. For the last decade, we have focused our efforts on the International Space Station, as a safe environment to understand some of these issues and try to find solutions for them. Moreover, our technology still limits our speed at reaching planetary bodies and also the extent to which we can carry supplies. Long duration space flight will require special space manoeuvres such as in space refueling of spacecraft which have just recently been attempted. This paper will review some of the main challenges of human space flight for space exploration that have been identified in the last decade. It will try to highlight the main problems in the areas of physiology, psychology, technology, society and international collaboration. Furthermore, proposals will be made for resolving these issues. Through this, it will also show why we are ready at this point to start exploring other planetary bodies.