IAF SPACE PROPULSION SYMPOSIUM (C4) New Missions Enabled by New Propulsion Technology and Systems (6)

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MANNED MISSION TO EUROPA USING ADVANCED POSITRON DRIVE

Abstract

Since the dawn of civilisation mankind has been searching for the possible ways to find out habitability on planets or their moons. Among the 150 known moons, Jupiter's moon Europa is being observed deeply. It was discovered by Galileo Galilei on January 8, 1610. It is the fourth largest Galileo moon with an icy reflective surface. Observations from various flyby aircrafts has made it clear that Europa is made up of silicate rock and an iron core. However it is surrounded by a layer of ice that is 50 to 105 miles thick. Scientists and researchers has a strong belief that if properly explored, Europa will show signs of life. Two missions are already planned to be launched in mid 2020 and 2022s by NASA and ESA which are unmanned missions. While this research focuses on sending a manned mission to the surface of Europa to set up an instrument with a drill that digs in the icy surface of moon and will send information back to the planet earth. An advanced propulsion system will be required to send the astronauts and then assure to make them come back safely. Advanced positron drive can be used to propel this type of mission which uses krypton. We can make more isotopes using neutron producing reactors. We will try to find out the possibilities and overcomes with this mission using a simulation software. Moreover, the lander needs to be specific regarding the landing on icy surface. Hibernating pods will be designed that will enable the astronauts to complete this mission without any failures. The paper will try to explore the production of antimatter and using it as a propulsion system for future space exploration with ease.