

HUMAN EXPLORATION OF THE SOLAR SYSTEM SYMPOSIUM (A5)

Going Beyond the Earth-Moon System: Human Missions to Mars, Libration Points, and NEO's (4)

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ANALYTICAL EXPLORATION OF MANNED SPACE MISSION TO HELIOPAUSE

Abstract

One of the most important things for the development of mankind is the various advancements in space technology. This is essential, as advancements in space technology have also opened up new frontiers in the development of our modern world as well. Everything that we learn from our universe has been utilized in some way of advancing our technology in our everyday lives as well. Each step in space exploration, takes humanity closer to the brink of significant advancement. Hence, the next logical step in space exploration would be to start exploring the outer fringes of our solar system. The outer boundaries of the solar system will provide the space programs of the world with enough data, so that advanced interstellar exploration may become a reality some day. However, reaching the outer solar system has its challenges as there would be a lot of problems associated with navigation, communications, power requirements, radiation shielding, life support planning as well as many other logistical problems which need to be solved before it would be possible to plan such a long range mission. This paper explores the aspect of an unmanned mission to the Heliopause which is considered as the outer boundary of the solar system along with a stopover at Pluto. The paper discusses the available nuclear technology of today in order to create a feasible mission plan to the Heliopause. Technology which is readily available today for a manned mission as well as for an unmanned mission is discussed as a case study and simulations have been used to strengthen the case. Moreover, this paper hopes to establish a precedence for an interstellar mission that can take the case study of this mission to the heliopause at least as a starting point in technological planning.