

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

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ADVANCED PROPULSION SYSTEM FOR SEARCHING EXOPLANETS

Abstract

In this world of science and technology, whenever mankind debate about space exploration; the frequently asked question is that “Does Extraterrestrial life exist? “. For more than two decades, Researchers and Astronomists are working hard to assure the existence of exoplanets (planets that orbit another star) and possibilities of life on them. In 1915, the Scottish astronomer Robert Innes discovered Proxima Centauri, a red dwarf star, which is the closest star to the sun and is almost three times larger than sun. On 24 August 2016, ESO confirms that in the habitable zone of this star, is orbiting an exoplanet named Proxima Centauri b. This planet is about 4.2 light years from our planet Earth, which is quite far from scientific as well as technological point of view. The habitability of this planet is not yet confirmed and is still hidden in mystery. The objective of this paper is to design a hybrid propulsion system for a deep space probe capable of carrying out an interstellar mission to the exoplanet and collect all possible data regarding the habitable atmospheric conditions. From the distance point of view, hybrid propulsion would be the best possible way to carry out the mission in less time duration. The Space probe will enter the interstellar space using advanced ion propulsion system and using Plasma propulsion the probe will search for the exoplanet habitable region. The deep space probe will be equipped with scientific instruments and tools like radiometers, magnetometers and cameras sensitive to infrared, visible and ultraviolet light etc. to study the atmosphere and composition of the exoplanet. Also, the power supply needs to be sufficient for the space probe to be in an active state throughout the mission. This research would transpire to be a ray of light in a dark tunnel and definitely open up gates to the interstellar space.