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DESIGN AND DEVELOPMENT OF A DYSON SWARM TO ENHANCE THE ENERGY RECEPTION
FROM PARENT STAR USING SOLAR SAILS

Abstract

As now we are evolving on the Kardashev scale and moving towards type 1 on the scale from being on 0.7. The energy requirements of our species is increasing day by day as we get more and more aware of technological complexities of this species. As we become interplanetary species in this next decade by civilizing Mars we need new and more efficient source of energy and can't be dependent on the planet's natural resources as these will not be enough for our survival in coming future. This paper will discuss the technological capabilities and the process of development of such a sphere capable of harnessing energy from sun and transmitting it to earth. From the attitude control of this swarm of solar sails which are capable of absorbing the energy being radiated by our host star to the technological advancement for the transmission of high-powered energy beams to a near earth power storage unit. A study about the orbital placement of the sails which will be capable of harnessing the energy on board as well as sending back to the mentioned storage unit is proposed is to be conducted. Furthermore, this paper will also conclude a cost analysis of the energy being harnessed and it's usage by showing a detailed analysis between current energy sources and their way to be used and the proposed system which can offer unlimited supply of pure energy in order of roughly $3e26$ watts at a radius of 1 Astronomical Unit. This paper will help to understand the viability of such an experiment which can help humankind to overcome their natural resources limitation and would help them to think beyond our solar system as this storage energy could send high energy to longer distances without any eddy losses during transmission. The paper also will establish a baseline for similar proposals to set a precedent for such an unmanned stellar energy harnessing device with capabilities of transmission with today's existing technologies.