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MODULAR NUCLEAR REACTOR STATIONS PARKED AT LAGRANGE POINTS FOR SOLAR EXPLORATION

Abstract

Le rˆeve des etoiles or the Dream of Stars has been the dynamo of mankind for technological advancement since the inception of civilization at Gobeklitepe. For over 10,000 years mankind has looked at the twinkling stars and yearned to get there. While extraordinary accomplishments have been achieved to make reaching moon and the Mars viable in the next 5-10 years, the outer solar system as well as locations beyond Mars in the inner solar system is still logistically difficult. One of the main constraints for long term space missions to long range destinations is the availability of power for these missions. All space missions whether manned or unmanned require power, and moreover, the scope of space missions is usually defined by the availability of power. In order to make space accessible by all, stationary power stations are needed to allow for space missions to get power for their needs. This paper discusses the concept of modular nuclear reactor stations that are parked at Lagrange Points for Supporting Various Space Missions. These modular stations can store power for any mission and can be even attached and detached to spacecraft as needed. With the availability of such mini modular stations parked at various Lagrange points, several missions can be easily deployed in the future. In this context, these modular power stations can be used as stopping points by spacecraft for powering up or they can also be used to support space habitats located at Lagrange points. This paper discusses the design of the modular reactors and the attachable/detachable stations for supporting future space missions. Sample calculations will also be provided for a sample mission and a sample modular nuclear reactor station.