Paper ID: 48205
student

25th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Highly Integrated Distributed Systems (7)

Author: Mr. Chaitnya Chopra
University of Petroleum and Energy Studies, India

Ms. Monika Sharma
University of Petroleum and Energy Studies, India
Mr. Monish Mathur
University of Petroleum and Energy Studies, India
Mr. RAHUL NAG
University of Petroleum and Energy Studies, India

CONSTELLATION OF CUBESAT FOR WIRELESS TRANSMISSION OF SPACE BASED SOLAR POWER

Abstract

A major problem facing Planet Earth is provision of an adequate supply of clean energy. It is widely agreed that our current energy practices will not provide for all the world's population in an adequate way and still leave our Earth with a livable environment. A major task for the new century will be to develop sustainable and environmentally friendly sources of energy. Solar power is an energy source that is virtually carbon-free and sustainable. We propose a system that collects solar power by a constellation/swarm of CubeSats orbiting the sun. They will harness solar power using absorption of solar energy, transmit it via RF/microwaves and reconvert it to a stable DC output, conveying it back to Earth by wireless means. Comprehensive tables and graphs will be given, which will depict the amount of time that will pass at each stage of the system and more importantly some idea on the cost in terms of energy, as well as money, will be discussed within today's context. Unlike systems for the terrestrial capture of solar, a space-based system would not be limited by the vagaries of the day-night cycle. It will also eliminate the need for large spaces of land for solar farms. Furthermore, proper selection of the transmission frequency will make delivery of power essentially independent of weather conditions. Thus, Space Solar Power could provide base load electricity and this system will further help in powering future space stations as well as in space exploration propulsion.