

16th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Interactive Presentations - 16th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE
FUTURE (IP)

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COSMIC RADIATION PROTECTION SYSTEM FOR LUNAR HABITATION

Abstract

The colonization of Moon in near future is not a surprise according to current population explosion. One of the many problems that Moon colonies will face is protection from harmful ionizing radiation or solar wind and the cosmic radiation originating from deep space. The flares originating from coronal mass ejection will pose a serious threat to power grids, transmission systems and various electronic devices leading to increased downtime. An exposure to these radiations can cause serious health issues even DNA mutations. Thus, impairing effects of these ions streams must be controlled for successful habitation. The strong magnetic field around the Earth acts as a natural protection system against the radiations which is a lot weaker around the Moon. The molten ions in the core of Moon are not as numerous as that in Earth, thus giving rise to less intense magnetic field around it, making it inhabitable. This problem could only be solved by creating an artificial magnetic field (AMF) which is robust, compact and power efficient, having a fail-safe system which is efficient enough to protect moon colonies. The proposed AMF must have multiple power sources, a precise control unit to regulate the strength, polarity and location pattern of magnetic field. One basic idea is to install several magnetic field generating units around our colonies which in turn will provide us with a collective magnetic field. A single big unit is not preferred due to high failure probability leading to hazardous effects to life in colonies.