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FORCE FIELD LUNAR DUST BARRIER FOR SUSTAINABLE ENVIRONMENT ON MOON

Abstract

In the book “A Discourse Concerning a New World and Another Planet” written by John Wilkins in 1638 was when it mentioned a lunar colony, which to this date is considered an extra mile to be taken. Moon holds ample resources as an asset for future space exploration, which for extraction or utilization demands at least interference of humans with precursor of numerous in-situ resource utilization missions involved in recent times. Pointing the substantial complication as lack of atmosphere and sufficient radiation shielding is what, holds back frequent human interactions. Initiating a possible response with theoretical work, able to decipher the solution to stages, this study proposes a magnetically controllable force field barrier of lunar dust, capable of clasp gases produced on site to provide a sustainable shielding from radiation prior to possible proportion. The numerical and analytical study from innovation, positions the dust barrier over the lunar surface, supported by conditionally designed lunar rover as baseline to future establishment. The work encompasses study of lunar regolith along with environmental factors, including gravity as factors of impact on either the procedure or formation of dust barrier. Computational design and analysis of the system are performed iteratively on software’s Autodesk Fusion 360 and COMSOL Multiphysics. The results will be a precursor for probable establishment for resources on Moon and an entire field itself in lunar resource exploration, extraction and utilization.