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A STUDY ON LUNAR EXPLORATION OUTPOST USING RETAINING WALL OF REGOLITH
SANDBAGS**Abstract**

The lunar surface is severe environment exposed to high vacuum, large temperature change, strong radiation and long night. In order to perform exploration activities in such environment, measure for survival are required. Especially in a human exploration, it is necessary to consider the protection method from the strong radiation by the solar flare. It is effective in protection of radiation to equip a human vehicle with the tank of water. However, the vehicles composition which formed the water tank to all directions is difficult. The moon's surface is covered with the regolith which piled up in a depth of several meters or more. The thick layer of a regolith is effective in heat insulation or interception of radiation. Then, we studied about the robot which builds the retaining wall by autonomous packing and stacking of the regolith sandbag as a retaining wall for heat and radiation. Prototyping of the builder robot and centrifugal load testing of sandbag were carried out. Then, the study result of the exploration outpost system using it, the composition of an exploration vehicle and the robot which builds the retaining wall by the sandbag, and its method of transportation are described. Moreover, the sunlight reflector and heat insulation equipment which were constituted from a thin film etc. are effective in the lunar surface exploration by the robot. This paper also describes the study result of the composition of these equipments, or the practical use method collectively.