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NEW COLOUR DESIGN MODEL FOR SPACE HABITABILITY: FROM THE CHINESE SPACE STATION TO THE FUTURE LUNAR BASE

Abstract

Considering the plan for human lunar exploration, habitation research became a core focus in order to support the psycho-physiological effects and challenges of confined, narrow and isolated space habitat. At present, China's is developing higher habitability requirements to be applied to the "Tiangong" space station and the lunar exploration program called "Chang'e Project". The harmony of the body mechanics, psycho-physiological health, social relation and emotional regulation are only a few aspects that need to be supported with a good habitability project. In specific colour plays a significant role in emotional regulation that affects the habitability and as a consequence the astronaut's comfort, efficiency and safety in space. Moreover the color design of the cabin also affects astronauts' spatial positioning, information acquisition and judgment, and psychological feelings.

Considering the relevance of the colour design to the habitability a new conceptual model has been developed with the support of the chinese space agency in order to select the appropriate colour design in such an extreme environment. The model incorporates human factors, human-centered approach and holistic methodology to develop the interior colour design of isolated space. In specific quantitative and qualitative psycho-physiological data (EEG, questionnaires, heart rate, blood pressure) are collected on a group of astronauts analogue subjects to test and select the most appropriate colour design in relation to positive and emotional comfort in order to increase space missions habitability.