Paper ID: 83069
student

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (IP)

Author: Mr. Rivaldo Carlos Duran Aquino
Universidad Nacional Mayor de San Marcos, Peru

Prof. Karen Cuba
Universidad Privada del Norte, Peru
Ms. Ariadna Celeste Pillaca Llanos
Universidad Nacional Mayor de San Marcos, Peru
Prof. Avid Roman-Gonzalez
Universidad Nacional de Moquegua, Peru

SUSTAINABILITY IN SPACE MISSIONS: INNOVATION IN RADIATION PROTECTION USING RECYCLED WATER

Abstract

The demand for innovative and practical solutions to enhance astronaut radiation safety is critical, especially in environments with prolonged exposure to ionizing radiation, such as space. This research will propose an anatomical and functional design and prototype for astronauts that incorporates a water-based protection system, leveraging water's radiation attenuation properties and its recyclability on the International Space Station (ISS). The development will focus on improving existing designs, combining radiation physics simulations with experimental tests using high-energy gamma radiation sources, and employing advanced sensors to measure the suits' effectiveness. Variations in the suit's thickness and the water composition, such as the addition of non-polluting compounds to maximize protection against ionizing radiation, will be explored. This development aims not only to increase the efficacy of radiation protection but also to promote new responsible practices in the space context.