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Radiation Fields, Effects and Risks in Human Space Missions (5)

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DESIGNING A NEURAL HELMET, MAPPING NEURAL PATTERNS IN AN ASTRONAUT'S BRAIN
TO DETECT COGNITIVE PROBLEMS

Abstract

During long-distance travels to other exoplanets, astronauts will be subjected to large amounts of cosmic radiation from the external environment. Exposure to such may result in the development of diseases such as Alzheimer's, Parkinson's disease, etc. in the bodies of astronauts. These diseases often affect the cognitive capacity of humans, affecting their ability to perform day-to-day operations, and affecting the neural patterns of astronauts. Also, the psychological distress caused due to long-distance travel may also result in depression, affecting the day-to-day performance of astronauts during their missions. We propose an idea to construct a brain-wave analyzer helmet to study the neural patterns of an astronaut's brain. The proposed construction would be linked to an operating system performing synthetic analysis of the neural patterns to detect any significant changes in neural patterns of astronauts' brains. This would further help scientists to simulate whether the astronauts traveling in space have developed any cognitive problems or not which may be a result of the development of any disease like Parkinson's or Alzheimer's, or psychological distress. The data collected from the helmet would enable scientists to develop space suits and spacecrafts which can shield the astronauts against the radiation.