Automatized Radiation Shield for Potential Space Colonies

Gulbaharli, Deniz (School: Ozel Cevizlibag Doga Anadolu Lisesi)

Aiming to ensure the long-term survival of human civilization, many proposals for space settlements have been made through the years, and a considerable number of space colonization advocates and groups are active today. However, radiation outside Earth's magnetic field poses a great danger to possible space settlements. Due to the monetary and mass constraints of adding radiation shielding to protect space settlements, current space settlement proposals, including proposed Mars settlements, are not designed to provide adequate protection from all cosmic radiation. This project designed an automatized radiation shield that detects solar and cosmic radiation and positions itself in order to provide complete protection for space settlements and settlers. Due to its compact design and low mass, this shield can be easily transferred to different locations, making it ideal for outdoors research camps on Mars. Geiger counters placed at intervals on the shield work concurrently to detect harmful radiation. When radiation is detected, a computer calculates the optimal position for the radiation shield, and the radiation shield is automatically relocated to protect astronauts and their habitat. The levels of radiation astronauts are projected to be exposed to are proven to be substantially lower with the use of this automatized radiation shield than the amount expected if currently existing alternatives are used. Thus, radiation caused health risks for long-term colonization missions can be minimized without sacrificing rocket payload capacity or incurring exorbitant additional costs.

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