SPACE AGE RADIATION PROTECTION

by

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ABSTRACT

As we enter the 21st Century, human beings will permanently occupy outer space, including operational space stations in low Earth orbit, work stations at various orbiting facilities throughout cislunar space (e.g. geostationary orbit), and initial bases on the surface of the Moon. Although small in overall number, mankind's permanent extraterrestrial population will be potentially exposed to a very high radiation risk, both from natural (cosmic) radiation sources as well as manmade radiation sources such as space nuclear power plants. This paper describes the projected radiation exposure environments that will be faced by astronauts in a variety of space work places, including extended human expeditions to the planet Mars. Advanced solid state radiation dosimetry devices necessary to provide adequate, real time and long term, radiation protection are described, including test radiation instruments used on the Space Shuttle. The need for advanced radiation protection programs for extended space missions is also discussed. Contemporary U.S. astronaut radiation exposure limits are compared to contemporary "terrestrial" exposure guidelines. Space radiation protection is a critical issue, if we are to permanently inhabit cislunar space and become a space-faring species.