

Abstract Submitted
for the DNP08 Meeting of
The American Physical Society

Variation of Space Radiation Exposure inside Spherical and Hemispherical Geometries ZI-WEI LIN, East Carolina University, YOUNES BAALLA, The University of Tennessee Space Institute, LAWRENCE TOWNSEND, University of Tennessee at Knoxville — We calculate the space radiation exposure to blood-forming organs everywhere inside a hemispherical dome that represents a lunar habitat. We derive the analytical path length distribution from any point inside a hemispherical or a spherical shell. Because the average path length increases with the distance from the center, the center of the hemispherical dome on the lunar surface has the largest radiation exposure while locations on the inner surface of the dome have the lowest exposure. This conclusion differs from an earlier study on a hemispherical dome but agrees with another earlier study on a spherical-shell shield. We also find that the reduction in the radiation exposure from the center to the inner edge of the dome can be as large as a factor of 3 or more for the radiation from solar particle events while being smaller for the radiation from galactic cosmic rays.

Zi-Wei Lin
East Carolina University

Date submitted: 01 Jul 2008

Electronic form version 1.4