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Calculation of cosmic ray shielding factor in different terrains

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The rate of production of cosmogenic nuclides is not only related to altitude and latitude, but also to topographic occlusion and the elemental composition of rock formations. Due to the occlusion of the terrain, it is necessary to establish a shielding factor calculation model in practical geoscience applications. In this paper, five geometric shapes of terrain are considered: slope, surface protruding hemisphere, spherical wall pit, spherical pit, cylindrical pit, and the numerical solution of each shielding factor is calculated by MATLAB program, and the corresponding terrain shielding factor calculation formula is fitted, which is convenient for geologists to apply them to the calculation of the concentration of nuclides in common terrain, and compared with the AMS measurement of nuclide concentrations in different terrains, the existing theory can be improved. It provides a practical calculation method for the calculation of the production rate and exposure age of cosmogenic nuclides in geophysics.

Student Submission

Yes

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