

## Evaluation of Neutron Emission Spectra from Proton-Induced Reaction for Space Shielding

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### Abstract

Neutron contribution is an important component of the secondary radiation field. For energies up to 400 MeV encompassing most of the incident spectrum for trapped protons and solar energetic particle events, energy-angle spectra of secondary neutrons produced from the proton-induced neutron production reaction are evaluated using the optical model for the direct reactions, Hauser-Feshbach model for the equilibrium emission, and exciton model for the preequilibrium emission, based on selected reference measurements. As a result, a good agreement has been achieved for entire emission energy and angle range, except for slight discrepancies at preequilibrium emission energies.