

Abstract Submitted
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What should neutron spectra from boron carbide devices look like?¹ CARL LUNDSTEDT, ELLEN DAY, SHIREEN ADENWALLA, Physics and Astronomy, Mechanical Engineering and CMRA, University of Nebraska-Lincoln, Lincoln, NE 68588 — GEANT4 (Geometry ANd Tracking) monte carlo modeling was performed on boron based neutron detectors [1]. Two different detector geometries were used. Geometry 1 consisted of a boron carbide (BC) layer placed on a Silicon (Si) layer in a cylindrical design with thermal neutrons of energy 0.025eV incident on the BC face. Geometry 2 was a rudimentary calorimeter made by sandwiching a moderator material between two BC/Si layers. The energy deposition spectra for the BC/Si device of various BC layer thicknesses for geometry 1 are presented as well as the spectra for geometry 2. In geometry 2, by changing the moderator material and thickness, higher energy neutrons may be detected, due to thermalization of neutrons in the moderator material. We show results for incident neutrons ranging in energy from 0.025eV to 2.5MeV. [1] C. Lundstedt, A. Harken, E. Day, B. W. Robertson, S. Adenwalla, submitted to NIM.

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