

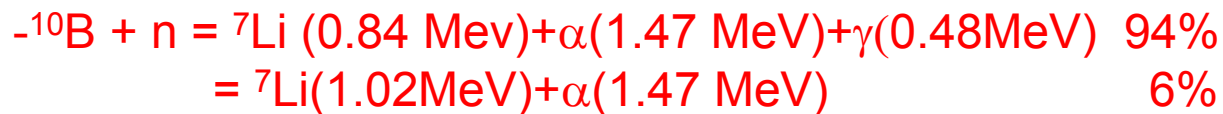
Preliminary results of a new boron coated neutron detector

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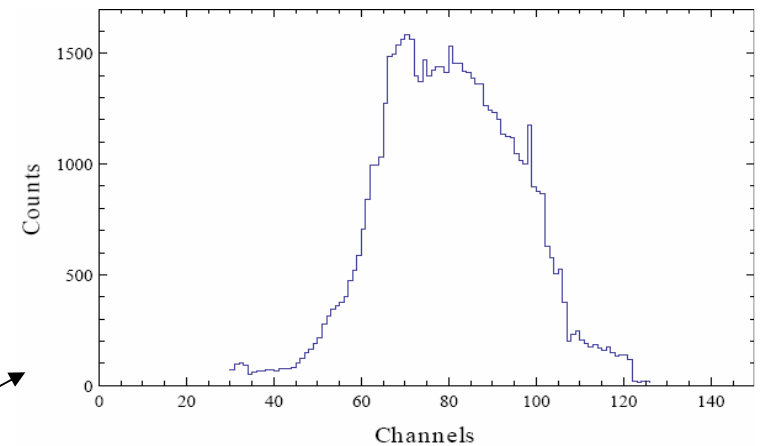
We present a low cost neutron detector based on 3 cm diameter, 150 cm long cylindrical metal tube coated on the inside with a thin layer of ^{10}B -enriched (93%) boron carbide ($^{10}\text{B}_4\text{C}$) fulfilled by 1 atm nitrogen for home security and portal monitoring applications

-Capture cross section for thermal neutrons $\sigma=3850$ barns

$$\sigma \propto 1 / \sqrt{E}$$



^{10}B enriched up to 93% material available as colloidal suspension in mineral oil, painted inside the tube.
Thickness of painted ^{10}B -enriched film is around 2.0 – 2.4 μm



Pulse height spectrum from boron coated straw tube surrounded by 7 cm thick polyethylene and irradiated by 20 mCi ^{252}Cf neutron source