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Boron and thermal neutron interactions on borosilica window photomultiplier tubes UGUR AKGUN, University of Iowa — The borosilica, a very common PMT window and envelope material, contains 5% Boron (1% ^{10}B). The high cross section for ^{10}B capturing thermal neutrons (3980 barn), is a concern for LHC experiments using borosilica window PMTs. This study investigates the rate and the size of the signals generated by thermal neutron boron interaction in borosilica window PMTs; Hamamatsu R7525-HA and R7600U-200-M4. Although virtually all of the thermal neutrons incident on the borosilicate glass are absorbed, probability of generating a PMT signal was measured to be 3×10^{-4} and 3×10^{-6} for R7525-HA and R7600U-200-M4 PMTs, respectively. For these signals the average pulse size was found to be between 20–30 photoelectrons. We also discuss that four anode PMTs allow the elimination of these events with an of?ine algorithm.

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