

SNO+ Neck Events Analysis

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This analysis focused on the unidentified events in the middle of the SNO+ detector caused by activities from the neck. Because of the nature of geometry and material of the neck, it was postulated that many events reconstructed in the middle of detector are a product of the complexities of the neck. This analysis attempted to account for those events in several ways. First, calculations were done on the probability of an event in the center of the SNO+ detector being picked up by one or more neck Photo-multiplier tubes. Probability was calculated by analysing the areas of detector and PMTs. It was then compared to the fraction of neck hit events over total events within a given parameter (1m radius from center). Second, in some plots, there appear to be a small cluster of events at the neck opening, after plotting it in 2d, events at neck opening did not show a pattern that could be generated from the ropes in that area, instead the events look scattered. Third, polonium-210 becquerel rates was examined at the inner edge of the acrylic vessel to gain insights of events in the neck by comparing the events generated from this rate and the events that were cut out from neck cuts. Third, the probability of a coincident with an actual event in the neck, caused by electronic noise of the PMTs was identified to gain sight into an uncertainty to data.

What area of study best describes your talk?

Physics

If you answered 'Other', please provide the study area.

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