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Measurement of background at the Angra Neutrino laboratory

The Angra II nuclear reactor, which has the 4 GW of thermal power, is located in the Angra dos Reis nuclear power plant in the State of Rio de Janeiro in Brazil. The large fission rate of $\sim 10^{20}$ per second produces about 5000 antineutrino interactions per day in a water Cherenkov detector with only 1 m^3 of fiducial volume at the distance of 25 m from the reactor core. As the flux of antineutrinos is proportional to the thermal power delivered by the reactor, by measuring the interaction rate of antineutrinos in the detector, we expect to be able to monitor the thermal power generated by the reactor in quasi-real time as well as the time evolution of the composition of the nuclear fuel. However, in order to observe antineutrinos coming from the reactor, we have to veto muons, one of the most important background components, gamma rays and understant the noise produced by eletronic used in data acquisition.
Moreover, energetic muons can produce neutrons through the process of spallation that can mimic the neutrons generated by the neutrino interaction, increasing the background. In this work we have performed the measurement of the muon flux at sea level as these data are very
important to estimate the background level in the antineutrino detector and studied how to eliminate the noise on PMTs that will be used inside the detector.

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