

## Backgrounds characterization, veto and measurement for the Double Chooz Experiment

Double Chooz is a disappearance neutrino experiment that uses nuclear reactors as source and the Inverse Beta Decay (IBD) reaction as detection signal, in order to measure the neutrino mixing parameter,  $\theta_{13}$ . The IBD produces a positron and a neutron, and the coincident detection, in time, of both characterizes a signal. The identification of spurious signals is of vital importance for a precise measurement of  $\theta_{13}$ , since non accounted events might affect the accuracy and precision of the  $\theta_{13}$  value. This poster shows how the experiment measures and vetoes the three main sources of background events: accidental, when two random events passes all the IBD selection criteria; Correlated, when a fast neutron from muon spallation processes scatters a proton and is detected afterwards; and Cosmogenics, when a cosmic muon creates long-lived beta/neutron emitters inside the active volume of the detector. In addition, it shows the direct measurement of the background through reactor-off data.

### Authorship annotation

for the Double Chooz collaboration

### Session and Location

Wednesday Session, Poster Wall #210 (Ballroom)

### Poster included in proceedings:

yes

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**Track Classification:** Poster (participating in poster prize competition)