

# Calibration of the DANSS detector with stopped atmospheric muons and their decays

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The DANSS detector is placed under the reactor core of Kalinin NPP and collects up to 5000  $\nu$  events per day. Experiment is aimed to scrutinize the sterile  $\nu$  hypothesis, and obtained limits exclude practically all sterile neutrino parameters preferred by BEST experiment. The main goal of the energy calibration is the determination of the energy scale coefficient  $K$ , however, the Birks and Cherenkov effects are also investigated. The report covers calibration with atmospheric muons ( $\mu$ ) stopped inside the sensitive volume of the detector including their decays. Muons were selected by applying geometrical constraints and searching for subsequent  $e^-$  or  $e^+$ . The spectrum of the Michel  $e^-/e^+$  is used for  $K_E$  determination. Bragg's curve built using  $\mu$  energy release along its track is sensitive not only to  $K_E$  but also to nonlinear effects: Birks effect, and Cherenkov radiation. This calibration complements the results of the calibration via radioactive sources and  $^{12}\text{B}$   $\beta$ -decays.

## Alternate track

1. Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors

## I read the instructions above

Yes

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