



Contribution ID : 109

Type : Oral talk

Sensitivity of ν GeN and RED-100 experiments to reactor-produced millicharged particles

Friday, 30 October 2026 10:15 (15)

Some extensions of the Standard Model (SM) predict the existence of fermions with an electric charge much smaller than that of the elementary charge. Such particles, known as millicharged particles (MCP), may be produced in nuclear reactors from the interactions between gamma-rays and the electrons of reactor materials. In this work, the MCP flux and energy deposition distributions at Kalinin Nuclear Power Plant (KNPP) are presented. The considered experiments, RED-100 (with a two-phase emission detector filled with either xenon or argon) and ν GeN (with a solid-state germanium detector) were in exposition at KNPP. The proximity of these experiments to high intensity flux of reactor gamma quanta allows for the probe of the MCPs by comparing reactor-ON (active reactor) and OFF (reactor shutdown) data. The expected count rates of MCP interaction with electrons of the sensitive volumes of the aforementioned detectors are further combined with measured background levels to assess the sensitivity of the experiments to hypothetical reactor-produced MCPs.

Primary author(s) : Mr. SIRO, Robert Folkenberg (Moscow Institute of Physics and Technology)

Presenter(s) : Mr. SIRO, Robert Folkenberg (Moscow Institute of Physics and Technology)

Session Classification : High energy physics: experiment

Track Classification : High energy physics: experiment