

Neutral Current events and new physics at nuSTORM

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The nuSTORM facility will provide ν_e and ν_μ beams from the decay of low energy muons confined within a storage ring. The instrumentation of the ring, combined with the excellent knowledge of muon decay, will make it possible to determine the neutrino flux at the % level or better. The neutrino and anti-neutrino event rates are such that the nuSTORM facility serving a suite of near detectors will be able to measure $\nu_e N$ and $\nu_\mu N$ cross sections with the % level precision required to allow the next generation of long-baseline neutrino-oscillation experiments to fulfil their potential.

The physics potential of nuSTORM also includes exquisitely sensitive searches for light sterile neutrinos such as those that have been postulated to explain the LSND or MiniBOONE results. The study conducted for delineating the sterile neutrino sensitivity reach of nuSTORM used charged current muon and antimuon events. However, there will also be a large number of neutral current events, which may contribute to enhance the sensitivity of nuSTORM. In this work we investigate the usefulness of neutral current events to probe sterile neutrinos and other new physics at nuSTORM.

Working Group

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