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Detailed studies of neutrino-nucleus scattering with nuSTORM

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The nuSTORM facility will provide ν_e and ν_μ beams from the decay of 3.8GeV muons confined within a storage ring. A detector placed approximately 1500m from the end of the decay straight, combined with a near detector, can be used to make exquisitely sensitive searches for sterile neutrinos. 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 status of the nuSTORM project will be presented along with the performance of the facility in terms of sterile-neutrino sensitivity and precision on measurements of neutrino-nucleus scattering.

Author: Prof. LONG, Kenneth (Imperial College London)

Presenter: TAYLOR, Ian (Warwick University)

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