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The REDTOP experiment: Rare Eta Decays to Explore new Physics

Wednesday 4 March 2020 15:30 (1h 30m)

Abstract: The integrated η and η' meson samples collected in earlier experiments have been about ~10^9 events, limiting considerably the search for such rare decays. A new experiment, REDTOP, is being proposed, to Fermilab and CERN, with the goal of collecting more than 10^{13} η/year (10^{11} η'/year) for studying of rare processes. Such statistics are sufficient for investigating symmetry violations, and for searches of new particles BSM. Recent studies have indicated that REDTOP has very good sensitivity to processes that couple to the Standard Model through three portals: the vector, the scalar and the axion portal.

REDTOP is aiming at running at Fermilab with a staged approach. In Phase-I, the experiment will be located in the APS hall and receive protons at 1.8-3.5GeV from the Delivery Ring. In Phase-II, an upgraded version of the detector will be proposed for running at PIP-II, where the η mesons will be produced with tagging. The kinematics will be fully closed and a the experiment will be sensitive to long-lived particles by measuring the missing 4-momentum of the event. The physics program, the accelerator systems and the detector for REDTOP will be discussed during the presentation.

Presenter: GATTO, Corrado (INFN / Northen Illinois University)

Session Classification: McGill Seminar as part of the CALICE Meeting (please note that department people will join us)