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REDTOP: Rare Eta Decays TO Explore New Physics

REDTOP will undertake an unprecedented experimental effort to search for Beyond Standard Model (BSM) physics by studying rare decays of the η and η' mesons. Strong theoretical motivations exist to explore New Physics in the MeV to GeV range.
The η and η' mesons are unique particles as they carry no standard model charges, a property shared only by the Higgs boson and the vacuum. The mesons also possess the same quantum numbers as he Higgs (except for parity). Since New Physics is also expected to be neutral under Standard Model charges, an η/η' factory is an excellent
laboratory for studying rare processes and BSM physics at low energy.

The REDTOP experiment is designed to explore violations of fundamental symmetries and search for new particles and fields in the MeV to GeV energy range.
The experiment focuses of producing an η and η' sample that is five orders of magnitude larger than the existing world sample, using high-intensity proton or pion beams with energies of a few GeV.
REDTOP aims to improve the sensitivity of key physics conservation laws by several orders of magnitude beyond previous experiments by exploring η and η' processes with branching ratios as low as $\sim 10^{-12}$.

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