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The REDTOP Experiment ANNA MAZZACANE, Fermilab, REDTOP COLLABORATION — The peculiarity of the η and η' mesons is that all their quantum numbers are zero (as it occurs for the Higgs). This is a very rare occurrence in nature and strongly constrains the dynamics of those particles. Therefore their decays offer many opportunities for exploring Physics Beyond the Standard Model (BSM). REDTOP is a propose η/η' factory which aims at detecting small deviations from the Standard Model by collecting a large event set from protons impinging on multiple fixed targets. The experiment will produce about 10^{13} η mesons or 10^{11} η' mesons corresponding to an increase of the existing world sample by four orders of magnitude. The experiment will investigate violations of discrete symmetries and will search for new weakly-coupled light particles in the MeV-GeV mass scale. It will also provide an opportunity to investigate several Standard Model predictions with unprecedented precision. The Collaboration has identified two different running modes (untagged and tagged) corresponding to different production mechanisms of η and η' mesons. The tagged mode offers the opportunity for discovering long-lived particles escaping the detector. The physics program, the accelerator systems and the detector for REDTOP are discussed.

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