

Reinterpretation of the ATLAS Search for Displaced Hadronic Jets with the RECAST Framework

Tuesday, 13 July 2021 14:45 (15 minutes)

A search for neutral long-lived particles decaying into displaced jets in the ATLAS hadronic calorimeter in pp collisions at $\sqrt{s} = 13$ TeV during 2016 with data corresponding to 10.8 fb^{-1} or 33.0 fb^{-1} of integrated luminosity (depending on the trigger) is preserved in RECAST and thereafter used to constrain three new physics models not studied in the original work. A Stealth SUSY model and a Higgs-portal baryogenesis model, both predicting long-lived particles and therefore displaced decays, are probed for proper decay lengths between a few cm and 500 m. A dark sector model predicting Higgs and heavy boson decays to collimated hadrons via long-lived dark photons is also probed. The cross-section times branching ratio for the Higgs channel is constrained between a few millimeters and a few meters, while for a heavier 800 GeV boson the constraints extend from tenths of a millimeter to a few tens of meters. The original data analysis workflow was completely captured using virtualization techniques, allowing for an accurate and efficient reinterpretation of the published result in terms of new signal models following the RECAST protocol.

Are you are a member of the APS Division of Particles and Fields?

No

Primary author: PROFFITT, Mason (University of Washington (US))

Presenter: PROFFITT, Mason (University of Washington (US))

Session Classification: Beyond Standard Model

Track Classification: Beyond Standard Model Physics