

Erratum: Search for Light Long-Lived Particles in pp Collisions at $\sqrt{s} = 13$ TeV Using Displaced Vertices in the ATLAS Inner Detector

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Corrections to two figures are noted. In the presentation of exclusion limits for the Va production of axionlike particles in Fig. 2, the branching ratio for the decay of the associated W and Z bosons into electron or muon final states was not factored out. For the associated W production model, this represents a numerical factor of 0.214, while for the Z production model it is a factor of 0.0673. The limits in the plot hence become weaker according to these numerical factors. The limit values quoted in the text have been updated accordingly to reflect the changes. In addition, the y -axis labels have been updated to explicitly include the branching ratio of the axionlike particle to gluons. In Fig. 1, the normalization of the $pp \rightarrow Za$ signal has also been adjusted to account for this factor.

The modified figures are Figs. 1 and 2.

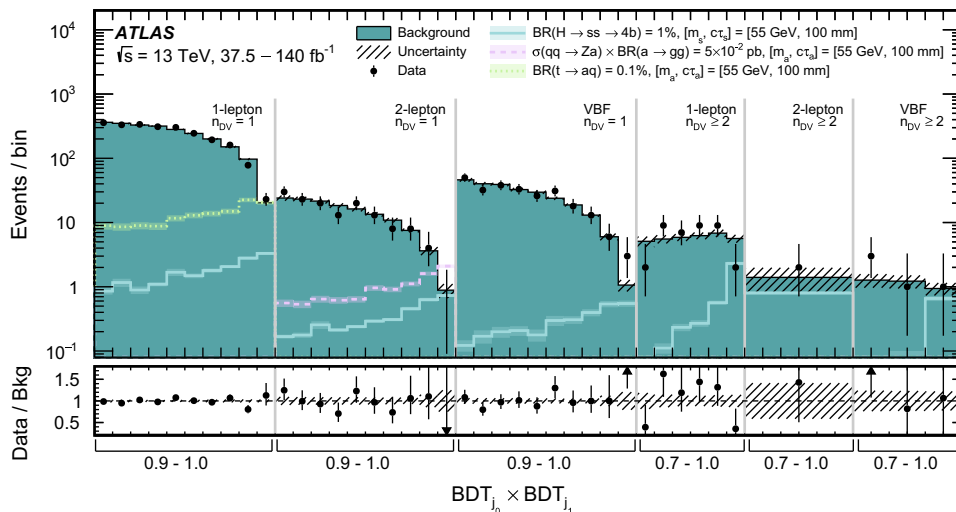


FIG. 1. Distributions of $BDT_{j_0} \times BDT_{j_1}$ for the observed data (black points) and the estimated background (filled histogram) with its uncertainty after the background-only fit to data in the six SRs described in the text. The signal expectation for the Higgs portal model with $m_s = 55$ GeV and $c\tau_s = 100$ mm is shown in the solid line, scaled to $BR(H \rightarrow ss \rightarrow 4b) = 1\%$. The signal expectation for ALP production in association with a Z boson scaled to $\sigma(qq \rightarrow Za) \times BR(a \rightarrow gg) = 5 \times 10^{-2}$ pb, and that for $t \rightarrow aq$ scaled to $BR(t \rightarrow aq) = 0.1\%$ are shown in the dashed and dotted lines, respectively, for $m_a = 55$ GeV and $c\tau_a = 100$ mm. The observed data in the 1- and 2-lepton (VBF) regions correspond to an integrated luminosity of $140(37.5) \text{ fb}^{-1}$. The ratio between the data and estimated background is shown in the bottom panel.

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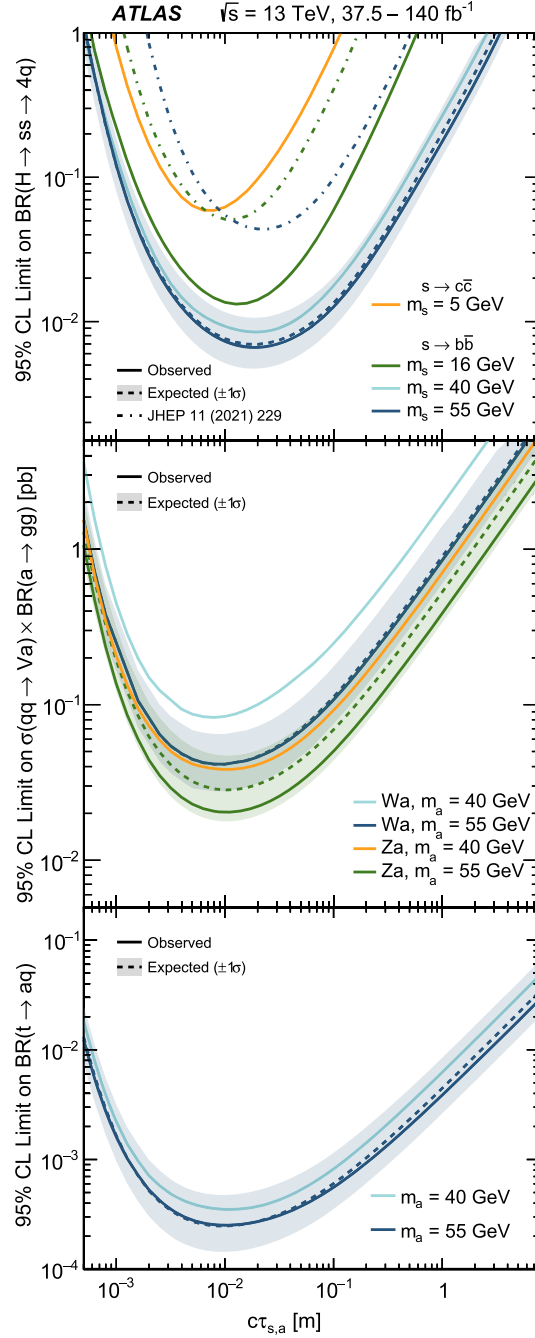


FIG. 2. The 95% confidence level limits on the (upper) Higgs boson branching ratio $H \rightarrow ss \rightarrow 4q$, (middle) $q\bar{q} \rightarrow Va$ cross section where $V = W$ or Z , and (lower) $t \rightarrow aq$ branching ratio shown as a function of the mean proper decay length $c\tau$ of the long-lived particle. The observed limits are shown with a solid line. The expected limits and corresponding $\pm 1\sigma$ uncertainty bands for $m_{s/a} = 55 \text{ GeV}$ are shown with dashed lines and shaded bands, respectively. In the upper plot, the limits shown are on the Higgs boson branching ratio $H \rightarrow ss \rightarrow 4b$ for $m_s = 16, 40, 55 \text{ GeV}$ and $H \rightarrow ss \rightarrow 4c$ for $m_s = 5 \text{ GeV}$. In the upper plot, the observed limits for the Higgs Portal model from the previous ATLAS search [1] are shown with the dot-dashed lines.

[1] G. Aad *et al.* (ATLAS Collaboration), *J. High Energy Phys.* 11 (2021) 229.