Contribution ID: **298** Type: **not specified**

Using a far-sideband method to estimate the backgrounds in H->Zy analysis

Thursday, 30 October 2025 20:34 (1 minute)

In the H⟶Zγ search, the main backgrounds are Z+jets, with jets misidentified as photons, and Z+γ, which shares the same final state as the signal. The Z+jets background is estimated using an ABCD method based on photon isolation and ID, with fake factors derived as a function of photon P_T
. For the Z+γ background, far-sideband samples ($M_{ll\gamma}$<100GeV, $M_{ll\gamma}$>160GeV) are used to train a BDT and extract scale factors, which are then applied to simulation. Signal extraction is performed with the reconstructed Higgs mass $M_{ll\gamma}$,This data-driven strategy achieves ˜15% accuracy in sidebands and avoids relying on high order empirical functions for background modeling.

Primary authors: Prof. 夏, 力钢 (南京大学); Dr 高, 展翔 (南京大学)

Presenter: Dr 高, 展翔 (南京大学)

Session Classification: Poster

Track Classification: ATLAS