

Indications for New Higgs Bosons in Associated Di-Photon Production

Wednesday, September 24, 2025 2:00 PM (15 minutes)

Statistically significant excesses exist at around 152 GeV in associated di-photon production contained in the sidebands of SM Higgs analyses. They are pronounced in several signal regions and can be explained by the Drell-Yan production of a new Higgs boson in association with a charged Higgs boson. In this context, we first examine the excesses in a simplified model approach, considering the decays of a charged Higgs to tau-nu, WZ and top-bottom. We then specialize our analysis for the real Higgs triplet and two-Higgs doublet models, resulting in a combined significance of 4 and 4.3 sigma, respectively.

Primary author: BANIK, Sumit (Universität Zürich)

Presenter: BANIK, Sumit (Universität Zürich)

Session Classification: Parallel 1

Track Classification: Parallel