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Implication of the 95GeV di-tau and di-photon excesses

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The CMS collaboration has reported the di-tau and also di-photon excesses with the local significance of $\approx 3\sigma$ levels where the invariant mass is m = 95–100 GeV. These excesses can be interpreted as a light scalar boson that couples to the third-generation fermions, particularly top and tau. Based on the simplest model that can account for the CMS di-tau excess, we evaluate experimental sensitivities to the additional light resonance using the results reported by the ATLAS collaboration. We see that a search for the top-quark associated production of the SM Higgs boson that decays into di-tau sets a strong model-independent limit. We also find that the CP-even scalar interpretation of the light resonance is excluded by the ATLAS results, while the CP-odd interpretation is not. Furthermore, we discuss the asymmetric di-Higgs production in this simplified model.

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