



Contribution ID: 8

Type: not specified

The Production of a Singlet Scalar at Future e^+e^- Colliders

Tuesday, 22 March 2022 16:30 (15 minutes)

Motivated by the multi-lepton anomalies, a search for narrow resonances with $S \rightarrow \gamma\gamma, Z\gamma$ in association with light jets, b -jets or missing transverse energy was reported in the paper arXiv:2109.02650. The maximum local (global) significance is achieved for $m_S = 151.5 \text{ GeV}$ with 5.1σ (4.8σ). In this paper we compute the production cross-section of this scalar candidate in e^+e^- collision by assuming that the couplings to Electro-Weak bosons are loop induced. We find that the cross-section could be large enough for S to be detected at future e^+e^- colliders. The leading production mechanism is $e^+e^- \rightarrow Z^* \rightarrow S\gamma$, which offers the opportunity of isolating S through the missing mass method.

Primary author: Mr MULAUDZI, Anza-Tshilidzi

Co-authors: MELLADO, Bruce (University of the Witwatersrand); KUMAR, Mukesh (University of the Witwatersrand); RUAN, Xifeng (Wits University); Mr KUMAR SWAIN, Abhaya (University of the Witwatersrand)

Presenter: Mr MULAUDZI, Anza-Tshilidzi

Session Classification: Parallel Session IV, Collider