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Searching for Light Boson via the Yukawa Process at Lepton Colliders

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I will present the prospect of Yukawa production of a light boson which can exist in an extended Higgs sector. A particularly interesting case is the light pseudoscalar in Type-X two Higgs doublet model which can explain the anomalous magnetic moment of muon at large $\tan\beta$. Considering ILC "Higgs factory" with CM Energy of 250 GeV, we show that the available parameter space can be fully examined by the (tau) Yukawa process at 5 σ with integrated luminosity of 2000 fb^{-1}. We also demonstrate the mass reconstruction of such a light particle which helps to minimize the background events considerably.

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01

Primary authors: Dr MONDAL, Tanmoy (Korea Institute for Advanced Study); CHUN, Eung Jin (Korea Institute for Advanced Study)

Presenter: Dr MONDAL, Tanmoy (Korea Institute for Advanced Study)

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