

## Contribution submission to the conference Würzburg 2018

### Hadron Production in Photon-Photon Processes at the ILC and new Physics signatures with small mass differences —

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Being an  $e^+e^-$  collider ILC has the prospect of providing very clean physics environment for making high precision measurements. In addition to the desired  $e^+e^-$  collisions, parasitic collisions of real and virtual photons radiated off the  $e^+e^-$  beams occur at the rates depending on the center-of-mass energy (ranging from 250 GeV to 1 TeV) and other beam parameters e.g at a centre of mass energy 500 GeV the expectation value is about 1.05  $\gamma\gamma$  events per bunch crossing. It is important to estimate the impact of these backgrounds which pile-up on each  $e^+e^-$  event. In the studies of BSM processes with small mass differences, where the visible decay products have low transverse momenta, the removal of these backgrounds is very challenging due to their similar natures. For example, here we discuss a specific case of light higgsinos with sub-GeV mass splittings, where the standard methods to remove this background remains inadequate. In this context we discuss an algorithm developed using the concept of displaced vertices to identify and cluster the tracks from same origin and its application on the low  $\Delta M$  higgsino analysis.

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