

ILD notes

ILD notes are not meant for publication, but are publicly available (public notes) or internally available (internal notes) through the ILD confluence.

ILD public notes

- **ILD-PHYS-PUB-2019-011** in preparation, "Discovery range for low mass extra Higgses in $e^+e^- Z\gamma$ ", Yan Wang, Jenny List, Mikael Berggren (reviewed by Kiyotomo Kawagoe and Junping Tian)
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 - **ILD-PHYS-PUB-2019-008** in preparation, "Hadronic branching ratios of the Higgs: $Hbb/\text{cc/gg}$ ", Masakazu Kurata, Ryo Yonamine (reviewed by Hiroaki Ono, Frank Simon)
 - **ILD-PHYS-PUB-2019-007** in preparation, " A_{LR}, A_{FB} from $t\bar{t} b\bar{b} q\bar{q}q$ ", Sohail Amjad, Adrian Irles, Yuichi Okugawa, Roman Pöschl, Ryo Yonamine (reviewed by Marcel Vos)
 - **ILD-PHYS-PUB-2019-006** in preparation, " A_{LR} , JES calibration from $e^+e^- \gamma Z$ ", Takahiro Mizuno, Junping Tian (reviewed by Mathew Wing)
 - **ILD-PHYS-PUB-2019-005**, August 2019, "Note to the Quartic Gauge Couplings ILD Benchmark", Jakob Beyer, Jenny List (reviewed by Taikan Suehara)
 - **ILD-PHYS-PUB-2019-004**, October 2019, "ILD benchmark: a study of $e^- e^+ \tau^- \tau^+$ at 500 GeV", Daniel Jeans and Keita Yumino (reviewed by Mikael Berggren)
 - **ILD-PHYS-PUB-2019-003** in preparation, "Limit on Invisible", Yu Kato (reviewed by Marcel Vos)
 - **ILD-PHYS-PUB-2019-002**, July 2019, "ILD Benchmark Analysis: $H\mu^+ \mu^-$ at 500 GeV", Shin-ichi Kawada (reviewed by Ivanka Bozovic and Filip Zarnecki)
 - **ILD-PHYS-PUB-2019-001** in preparation, "Higgs Mass from Hbb ", Junping Tian (reviewed by Frank Simon)
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- **ILD-TECH-PUB-2017-001**, 12 June 2017, "Impact of Beam-Gas Interactions of the IP region of ILD", Robert Karl and Jenny List (reviewed by Henri Videau)

Abstract: Due to two changes in the ILC baseline design which reduce the focal length of the final doublet and introduce an additional beam position monitor, the forward region of ILD has to be redesigned. Within this context, the option of removing the vacuum pump from the forward region of ILD is under consideration. This removal would imply a degradation of the vacuum resulting in a higher background of beam-gas interactions. Therefore, the interactions between the electron bunch of the ILC and the residual gas atoms in the interaction region of ILD, their pressure dependency and their impact on the detector was studied with Geant4-based simulations. It has been shown that beam-gas collisions constitute a non-negligible, but minor source of background even if the pump is removed.

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