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Measurement of the Higgs to diphoton branching fraction at 3 TeV CLIC

Here we address the results of a full simulation of experimental measurement of the Standard Model Higgs boson decaying to a pair of photons at 3 TeV center-of-mass energy at the Compact Linear Collider (CLIC). Since photons do not couple to Higgs boson at a tree level, any deviation of the Higgs to photons coupling may indicate a New Physics. We show that the product of the Higgs production cross-section in W+W– fusion and BR (H ⟶ γγ) as the observable for determination of the Higgs to photons coupling, can be measured with a relative statistical precision of 5.5%, assuming the integrated luminosity of 5 ab–1 and unpolarized beams.

Primary author: Ms VUKASINOVIC, Natasa (VINCA Institute of Nuclear Sciences, University of Belgrade)

Co-authors: Dr BOZOVIC-JELISAVCIC, Ivanka (VINCA Institute of Nuclear Sciences, University of Belgrade); Mr KACAREVIC, Goran (VINCA Institute of Nuclear Sciences, University of Belgrade)

Presenter: Mr KACAREVIC, Goran (VINCA Institute of Nuclear Sciences, University of Belgrade)

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