

Sensitivity to anomalous quartic gauge couplings in photon-photon interactions at the LHC

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The exclusive two-photon production at the LHC of pairs of W and Z bosons provides a novel and unique test-ground for the electroweak gauge boson sector. In particular it offers, thanks to high gamma-gamma center-of-mass energies, large and direct sensitivity to the anomalous quartic gauge couplings otherwise very difficult to investigate at the LHC. An initial analysis has been performed assuming leptonic decays and generic acceptance cuts. Simulation of a simple counting experiment has shown for the integrated luminosity of 10 fb⁻¹ at least four thousand times larger sensitivity to the genuine quartic couplings, a_0^W , a_0^Z , a_C^W and a_C^Z , than those obtained at LEP. The impact of the unitarity constraints on the estimated limits has been studied using the dipole form-factors. Finally, differential distributions of the decay leptons have been provided to illustrate the potential for further improvements of the sensitivities.

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