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Generation and validation of Monte Carlo signal events for the H->ZdZd->4l Analysis

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Abstract content
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Considering the prediction by several models of a new sector with a light new gauge boson (Zd) coupled with Standard model, the discovered Higgs boson can be used as portal to probe this new sector [1]. The leptons from very light Zd are very boosted and therefore are potentially close to each other making the isolation criteria inefficient with background from J/Ψ and Y at lower energies below 15 GeV. The Large Hadron Collider run 2 data collection and analysis will be in the light to explore this region. We present with respect to several production modes the generation and validation of signal events for the H-> Zd Zd -> 4l and optimization of cuts.

[1] Curtin D, Essig R, Gori S, Jaiswal P, Katz A, Liu T, Liu Z, McKeen D, Shelton J, Strassler M, Surujon Z, Tweedie B and Zhong Y M 2014 Phys. Rev. D 90(7) 075004 URL http://link.aps.org/doi/10.1103/PhysRevD.90.075004

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