

The Overlay Monte-Carlo method for estimating the pile-up background in diboson production in pp collider experiment

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The longitudinal coordinate of origin of the photon produced in collider experiment is usually relatively poorly measured. Therefore in case of diboson production in pp collisions there is the distinct possibility that some events of interest passing the final selection in data are actually from two overlapping hard scatter processes, else pile-up background.

In this study a Monte-Carlo-based estimate of this background source is performed. Pile-up events are built by overlaying the separate simulations of single photon production and single Z boson production at particle-level. Finally, the number of such background events in the region of interest can be obtained by applying detector efficiencies.

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