

XXVIII International Workshop on Deep Inelastic Scattering and Related Subjects



Contribution ID: 302

Type: **Contributed Talk**

Prospects for measurements of H/Z production cross section ratios using CMS Run II data

Tuesday, 24 March 2020 15:40 (20 minutes)

We present prospects for the direct measurement of ratios of differential cross sections for the production of Z and Higgs bosons in proton-proton collisions, using data taken by CMS during the LHC Run II. The aim of the study is to investigate soft and hard gluon emission in the initial state for Higgs and Z production mechanisms. Hence, we focus on variables known to be sensitive to the production mechanisms of heavy bosons: jet multiplicity, transverse momenta of the boson and leading jet, and momentum balance in the transverse plane. We use Monte-Carlo samples to study the feasibility of the measurement and estimate the expected precision, and find that visible effects of the difference of production mechanisms could be observed in Run II data.

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Session Classification: Electroweak Physics and Beyond the Standard Model

Track Classification: Electroweak Physics and Beyond the Standard Model